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ABSTRACT

In 1965-66 most local school districts in Pennsylvania completed reorganization by consolidating 67 county school offices into 25 or 30 intermediate administrative units. This document presents the results of various task group activities and projected activities to develop a "generalized" educational planning, programing, budgeting system (PPBS) that can be effectively utilized by these intermediate units. The PPB system in this study assists intermediate unit administrators by presenting information regarding the implications, costs, and benefits of alternative courses of action relevant to resource allocation decisions. The system development from planning and design stages to full implementation and technical and information system development activities are described. Related documents are ED 043 930 and EA 003 898. (Author/RA)

FINAL
REPORT

P P B S

INTERMEDIATE UNIT PLANNING STUDY

FINAL REPORT

PLANNING-PROGRAMMING-BUDGETING SYSTEM

An Intermediate Unit Planning Study conducted by:

The Public Schools of Bucks, Cameron, Elk, McKean, Montgomery and Potter Counties of the Commonwealth of Pennsylvania.

Dr. George E. Raab, Superintendent
Bucks County Public Schools
Mr. Philip M. Jones, Superintendent
Cameron County Public Schools
Mr. William A. Anderson, Superintendent
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McKean County Public Schools
Dr. Allen C. Harman, Superintendent
Montgomery County Public Schools
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Potter County Public Schools

This study is supported by:

Department of Education through
a USOE, ESEA Title III Federal Grant,
Project No. 67-4280

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Table of Contents

BUREAU OF CURRICULUM DEVELOPMENT AND EVALUATION
PENNSYLVANIA DEPARTMENT OF EDUCATION
ESEA TITLE III - Termination Report

Project Information

Project Title	2. USOE Number	3. Region Number
Intermediate Unit Planning Study	67-4280	

Briefly summarize the purpose of the project (Brief Abstract)

This project was concerned with development and pilot operation of an EPPBS in local school districts and intermediate units in order to facilitate input requirements for the Pennsylvania Department of Education's Planning Programming and Budgeting System.

Name of Grantee (Local Education Agency)	6. Address (No., St., City, State
Office of the Superintendent of Schools, Montgomery County	Montgomery County Courthouse Annex Norristown, Pa. 19404

Name of County in which LEA is located	8. Congressional Districts in Service Area of Project
Montgomery County	8 and 13

Name of Project Director (Most Recent)	10. Address (No. St., City, State, Zi	
(Dr.) Albert M. Neiman	Administration Building Bucks Co. Annex Building 80 East Court Street Doylestown, Pa. 18901	Phone 348-1940 Area Code 215

Name of Person Authorized to Receive Grant	12. Address (No., St., City, State, Zip	
(Dr.) Allen C. Harman	Montgomery County Courthouse Annex Norristown, Pa. 19404	Phone 279-8400 Area Code 215

Position or Title

County Superintendent of Schools

Signature of Person Authorized to Receive Grant	Date Submitted
Allen C. Harman	September, 1971

Indicate degree to which Title III project activities have continued after phase-out of Federal support.

_____	Activities not Continued	XX	Activities continued at same level as original project
_____	Activities continued at less than original project level	_____	Activities continued at greater or expanded level above original project level

II. General Information

A. Additional Project Information

1. If the project had Project Director(s) in addition to that named in #9 above, please list by name and indicate dates during which each held position.
Dr. C. Edwin Brewin, Jr., 1967-68

2. Is most recent Project Director (#9 above) presently a member of LEA's staff. Yes X No _____

If not, please indicate his most recent known address.

3. Indicate location of Project's fiscal and program records.
Bucks Co. Courthouse Annex, 80 East Court St., Doylestown, Pa. 18901

B. Fiscal History of Program

1. Indicate type of program

XX Regional Planning
_____ Other Planning
_____ Operational
_____ Other (Specify _____)

a. If other than planning grant, was this project an outgrowth/continuation of a planning grant under ESEA Title III? Yes _____ No _____

If Yes, indicate prior project by
USOE Number _____ & Region Number _____

2. Project Life

a. Beginning date of first grant June 1, 1967

b. Ending date of final grant (Include extensions)
June 30, 1971

c. Total length of project in months 48 months

3. Grants and Expenditures

a. Total federal funds awarded:

By USOE 759,098.78
By PDE _____

Total 759,098.78

b. Amount returned to funding source (unexpended amounts carried over to subsequent grant periods should not be included here)

$8,919.40

AUTHORIZATIONS AND BUDGETS

June 1, 1967 - May 31, 1968 -	$ 259,918.42
June 1, 1968 - May 31, 1969 -	$ 244,378.92
June 1, 1969 - May 31, 1970 -	$ 209,871.07
July 1, 1970 - June 30, 1971 -	$ 49,930.37
TOTAL - Federal funds	$ 759,098.78

PERSONNEL POSITIONS IN EFFECT THROUGHOUT THE PROJECT

Director: coordinated all study activities 6/1/67 - 6/30/71

Coordinator of Research: coordinated all research activities at county and local school district levels with research activities of outside agencies - 8/21/67 - 5/30/68.

Education Researcher: cooperated in development of research designs and evaluations - 9/1/67 - 12/31/67.

Coordinator of Local School District Planning: coordinated local school district planning activities - 9/1/67 - 12/31/69.

Senior Programmer: assisted in systems development, wrote, tested, documented and supervised programs for portions of the study that required EDP applications 8/1/67 - 5/31/70.

Assistant Director: coordinated field activities and responsibilities for aiding local school districts in developing long range plans with the intermediate unit - 7/1/70 - 6/30/71.

Director Data Processing: responsible for collection and analysis of base data and aiding local school districts in Educational Data Processing needs - 6/1/69 - 6/30/71.

Consultants: consultants were used in areas of administration, organization, supervision, personnel management, business management, curriculum development, instructional media, special pupil services, electronic data processing and operations research during the first year of funding.

Three Secretaries Class II: assigned to a secretarial pool for the study - 6/1/67 - 5/30/70.

Secretary Class II - assigned to Assistant Director - 7/1/70 - 6/30/71.

Bookkeeper: Responsible for all bookkeeping - 6/1/67 - 5/30/70.

CHAPTER I

GOALS AND DESIGN

Background Information

The majority of local school districts in the Commonwealth of Pennsylvania completed reorganization during the 1965-66 school year. Since then, the State Board of Education has studied the reorganization problems involved in the consolodiation of the 67 county superintendents of schools offices into 25 or 30 intermediate units as directed by Appropriations Act 83-A, December 1, 1965. This study resulted in the adoption in January, 1967, of "A State Plan of Intermediate Units." Legislation has recently passed the General Assembly to implement the Plan. Following the enactment of this legislation, the State Board of Education is now in the position to adopt regulations to guide the establishment of intermediate units in the Commonwealth of Pennsylvania.

The program of services provided by each intermediate unit will vary according to the educational needs of the region served by the unit. The period of time between the establishment of the intermediate units and their first operational year will be devoted to carrying out two tasks:

1. Continuation of essential services by the staffs of the reorganized county superintendents of schools offices; and
2. Development by the reorganized staffs of a detailed "best" program of services structure for the coming fiscal year and projection of this program structure for four additional years.

The satisfactory accomplishment of this second task is critical to the development and growth of the intermediate unit in Pennsylvania. Because of the importance of this task a number of educational organizations and institutions have joined forces to develop a "generalized" Educational Planning-Programming-Budgeting System (PPB System) that can be effectively utilized by intermediate units throughout Pennsylvania.

The EPPB System developed in the study will help the intermediate unit administration and board by providing information on which to base decisions on the allocation of resources to attain the intermediate unit objectives. Its essence is the development and presentation of information as to the full implications, the costs and benefits of the major alternative courses of action relevant to major resource allocation decisions. It is not intended as a cure for all types of intermediate unit administrative problems.

The major functions of the EPPB System are:

1. Identification of the basic objectives of the intermediate unit and relating these to all activities of the intermediate unit;
2. Consideration of the future implications of these objectives; and
3. Systematic analysis of the available alternative courses of action necessary to satisfy these objectives.

The third function involves the systematic identification of alternative ways of carrying out the basic objectives, an estimation of the total cost implications of each alternative and an estimation of the expected results of each alternative.

The county superintendent of schools offices and public school districts of Bucks, Cameron, Elk, McKean and Potter Counties have participated in this study. Montgomery County Superintendent of Schools Office acted as an observer.

The U. S. Office of Education provided financial support. The Department of Education, Commonwealth of Pennsylvania, and Research for Better Schools, Incorporated, ESEA Title IV Regional Educational Laboratory, have provided assistance in the dissemination of information on the study.

The Government Studies Center of the Fels Institute of Local and State Government, University of Pennsylvania has been responsible for the development of the general study direction and coordination of university research staff.

The Graduate School of Education, University of Pennsylvania has provided expert educational assistance. The Management Science Center of the Wharton School of Finance and Commerce, University of Pennsylvania evaluated the potential of "simulation models" and has assisted in the development of the EPPB System by providing expert statistics and operations-research assistance.

Goals of the Study

In Pennsylvania, local school districts have the major responsibility for the provision of public education through the twelfth grade for children residing within their boundaries. Local districts derive their authority from the State, which exercises general regulatory power and provides financial support in varying amounts depending on the characteristics of the local districts.

At the present time, county superintendent of schools offices exist in each of the sixty-seven counties of Pennsylvania. These county offices are now in a state of transition. Originally formed when there were far greater numbers of local school districts, many of them quite small, these county offices once served primarily to assist the State Department of Public Instruction in obtaining compliance with its administrative regulations on the part of local districts. In recent years there has been a distinct trend by county offices toward provision of vital support services to local school districts. The importance of a unit capable of augmenting the educational capabilities of local districts has been recognized, by the Department of Education in its plan for intermediate units. In the plan, intermediate units have been formed from one or more counties with explicit responsibility for providing supporting services to local school districts. The intermediate unit plan endeavors to extend to all local districts in the Commonwealth the types of services now provided by some of the more progressive county offices.

The intermediate unit plan will not alter the basic responsibility of local school districts for providing public education within their districts. It provides a unit capable of augmenting the capabilities of local districts by providing services which it would not be feasible for each local district to supply for itself. Thus, intermediate units share with local districts the responsibility for achieving educational objectives common to local districts within the area served by the intermediate unit. While both local districts and intermediate units are subject to regulation by the State, the primary responsibility of the intermediate unit is to the local school districts which it serves.

The application of EPPB System concepts in this study take into account this inseparable relationship of intermediate units and local districts to the single constituency of students which they jointly serve.

Through the development of EPPB System, this study was designed to achieve two goals:

1. The primary goal was concerned with improving the quality of the capabilities of the intermediate unit to accomplish its planning and administrative responsibilities effectively. It was equally intended to strengthen the quality and the quantity of the services the intermediate unit provides to the local school districts.
2. The secondary goal was designed to assist the local school districts in Bucks, Cameron, Elk, McKean and Potter Counties to more effectively accomplish their own planning and administrative responsibilities, and to increase the value of their own services to their own pupils through a more efficient utilization of their own existing resources.

The development and use of the EPPB System involved the county boards of school directors, county superintendents, county staffs and local school district

chief school administrators. This group reflected the interests of the local school district by assuring that the EPPB System provided an intermediate unit service structure to accommodate the continually growing needs of the local school districts.

General Design Considerations

As noted earlier, local school districts have full responsibility for the conduct of public education through the twelfth grade within their respective attendance areas. The intermediate units are responsible for providing services to augment the capability of local districts to achieve their educational objectives. The State Department of Education exercises, for the Commonwealth, the ultimate authority for all public education in Pennsylvania and establishes regulations governing the local districts and intermediate units. In addition the Department of Education retains responsibility for providing certain services to support local school districts.

Because of the foregoing constraints the EPPB System approach in this study consists ideally of an integrated three-component system: The first cycle of planning, programming and budgeting is conducted by the local district; the second cycle is conducted by the county office or intermediate unit; and the third cycle is conducted at the Department of Education level. Feedback is required among the three components of the overall system. However, as a practical matter it was not feasible under the first three years of the study simultaneously to develop a system for gathering and processing information at the third, or state level. The EPPB System component for the Department of Education will be pursued during the fourth year of this study.

Therefore, the general design concept pursued in this study was that of an EPPB System to serve both local districts and county offices or intermediate

units. This system was designed so that the first cycle of planning, programming and budgeting is conducted by the local districts and the second cycle is conducted by the county offices or intermediate units. The results of the local districts efforts provided an "input" to the county office or intermediate unit cycle. After the first year of operation, an existing five-year program for the intermediate unit and for the local districts was available to each at the beginning of the planning-programming and budgeting cycles. This approach permitted county offices or intermediate units to focus their efforts with maximum effectiveness on those needs of greatest concern to local districts within their boundaries.

The EPPB System design had to be sufficiently flexible to serve all types of local districts and county offices in the five participating counties. The result is expected to be a general system design applicable throughout Pennsylvania.

It is assumed that technical manpower will continue to be in short supply for the foreseeable future and therefore, certain technical functions such as forecasting and advanced analytical capabilities will be provided by county offices or intermediate units for some or all of the local districts which they serve.

Two county offices and three local school districts in each county cooperated and participated in the development, pilot testing and implementation of the EPPB System. Experience gained through the initial implementation suggested that local districts are unlikely to participate unanimously in the EPPB System unless participation is mandated by the state. Modifications in the county office or intermediate unit component have been made during Phase IV and V of the study to facilitate implementation without complete inputs from local school districts.

CHAPTER II

PROJECT ACTIVITIES

Results of Work Program

The study was divided into five phases. Phase I was devoted primarily to research, examination of the status of the educational systems at the local school district and county office levels, analysis of system requirements and completion of the over-all design of the EPPB System. Phase I began on June 1, 1967, and terminated in March, 1968.

Phase II, completed in November, 1968, was concerned with the development of the operating EPPB System. This included the experimental pilot operation of the EPPB System prior to completion of system development and of plans for system implementation. Special methods for predicting the consequences of various program decisions were employed.

Phase III, completed in March, 1969, represented the period during which two of the participating county offices and six local school districts employed the EPPB System and related techniques in preparing their actual program and budgets in parallel with traditional methods.

Phases IV and V which extended to the end of the project in May, 1970, were devoted to analysis of the experiences gained in Phase III and revision, as necessary, of the EPPB System and related techniques. Implementation of the revised system by two county offices and local school districts in the preparation of their plans, programs and budgets for the fiscal year beginning in 1970 was completed. During these phases of the study an education and training program for county offices and local school districts throughout Pennsylvania was developed and implemented. Dissemination efforts were tied in with these activities.

This chapter contains a discussion of the planning activities, results of these activities, dissemination of results, effects on participating and cooperating educational organizations and institutions and procedures for carrying forward the study following the termination of the federal grant. The work program for Phase I was divided into 25 separate tasks. In the sections that follow, each task is described and the results discussed.

Administration (Task #1.0-1.2) Phase I

This task was concerned with organizing and carrying out accounting, reporting, planning, coordinating and clerical operations for the project. The Study Coordinator at this time was Dr. Charles E. Brewin, Jr., Assistant County Superintendent; he assumed general responsibility for these initial activities. Mr. John K. Parker, Director of Technical Support, of the University of Pennsylvania, coordinated university related administration. The documentation procedure developed under Task #2 (see Phase I Task Network) provided documentation control for all other tasks in Phase I.

The Montgomery County Board of School Directors was the recipient of the funds of the parent project, "Exploring New Horizons for In-Service Training and Student Residency Programs" (#67-4280), and by virtue of this fiscal responsibility has received the moneys allocated to the Intermediate Unit Planning Study portion of the project. These moneys have been transferred during each fiscal year to the Bucks County Board of School Directors in accordance with the procedure established by Mr. Sandler of Dreslin and Company, a local accounting firm. Dreslin and Company is presently employed by both Montgomery and Bucks County Boards of School Directors as their auditor. The accounting system employed

to control the funds for the Intermediate Unit Planning Study was keyed to the accounting system established for the parent project, "Exploring New Horizons for In-Service Training and Student Residency Programs."

The Bucks County Board of School Directors exercised general coordination of the study for the county offices and local school districts of Bucks, Cameron, Elk, McKean and Potter Counties and among cooperating educational organizations and institutions. The Bucks County Superintendent of Schools office arranged for financing of the study and administering of all funds for the study. The office also provided data or arranged for data collection, professional and non-professional assistance and printing of study materials and reports. During Phases II, III, IV, and V of the study it was necessary for the Bucks County Superintendent of Schools Office to provide adequate professional and non-professional assistance to the local school districts and county offices who participated in the EPPB System pilot operation.

The organizational structure did not function satisfactorily during the first phase of the project. The progress review and policy adoption process was slow, even though the Steering Committee met nine times, County Superintendent of Schools Committee three times and Professional Advisory and County Board of School Directors Committee twice each during the period from August 1967 through March 1968. Consequently, during the EPPB Systems pilot operations that took place during Phases II, III, IV, and V the structure was simplified to enable more rapid progress review and policy implementation.

Because Phases II, III, IV, and V, EPPB System pilot operations did not involve all local school districts and county offices in Bucks, Cameron, Elk, McKean and Potter Counties, the membership of the Professional Advisory and

County Board of School Directors Committees at policy review and adoption meetings was restricted to representatives of participating administrative units. However, all local school district representatives and county board of school directors from the five participating counties and Montgomery County were invited to progress review meetings.

Work Program (Task #2)

The activities involved in this task were concerned with the development of the Phase I task networks and task descriptions. Study personnel were assigned specific tasks and completion dates were designated for these tasks. A documentation procedure was established which assisted the Technical Director and Study Coordinator in the monitoring of all Phase I tasks. All Steering Committee and County Superintendent of Schools Committee members were provided with a documentation manual and copies of all documents. These documents provided the basis for discussion at all committee meetings.

During the period from September through March a number of tasks were revised and new completion dates were established. These changes were misstated by the difficulty of gathering certain data, as well as by lack of previous experience in planning the related activities. Adjustments were made by developing new task descriptions networks.

Project Evaluation (Task #3.0-3.2)

A plan was established for evaluating the study. It consists of the following elements:

1. Management control evaluation, the purpose of which was to provide information for making decisions:
2. External evaluation, a process to provide periodic feedback for continuous refinement of plans and procedures:

3. Field Evaluation, a product evaluation intended for determining the effectiveness of the study.

Participant Training (Task #4.0-4.1)

This task was concerned with the development of a plan for conducting a training program for Bucks, Cameron, Elk, McKean, Montgomery and Potter County administrators and county board members. The training program stressed specialized concepts and knowledge essential to understanding EPPB Systems. Three meetings were established for this purpose; however, because of changes in the work program only two were held.

The November 10 meeting was held in Bucks County at the Warrington Country Club. The March 14 meeting was held at the Buttonwood Inn, Emporium, Cameron County for the Cameron, Elk, McKean and Potter county office staffs, county boards and local chief school administrators. The March 15 meeting for the Bucks County Office Staff, County Board and Chief School Administrators, which covered the same material as the March 14 meeting, was held at the Warrington Country Club, Warrington, Bucks County.

The primary purpose of the November meeting was to bring the personnel together from the participating and cooperating educational agencies and institutions. This was necessary in order that all concerned with the study would have an opportunity to understand the problems peculiar to each of the counties and school districts involved. The secondary purpose was to provide the participants with background information concerning the study and the utilization of management science and operations research techniques in the study. The March meetings were devoted to providing the participants with a thorough knowledge of the EPPB System designed during Phase I and the procedures to be followed during Phases II, III, IV, and V.

The meetings for Phases II, III, IV, and V were held by region or county. This change was brought about by the fact that not all county offices and local school districts wished to participate in the EPPB System pilot operations, and by differences in the objectives of the participating organizations which had become evident during Phase I.

Meeting of School Directors and Superintendents (Task #5.0-5.3)

A plan was established for arranging and conducting periodic meetings of county staffs, county school directors and local school district administrators of Bucks, Cameron, Elk, McKean and Potter Counties. Because Montgomery acted as an observer, only the County Superintendent and designated county staff members participated in these meetings. As mentioned above (Task #4.0-4.1) these meetings were held in November 1967 and March 1968.

The County Superintendents of Schools Committee met three times from August 1967 through March 1968.

Information and Education Plan (Task #5.0-6.1)

The procedure outlined in this task developed the Phase I information and education plan in detail and provided the basis for planning Phases II. III,IV, and V. Procedures were established to communicate interim and final results of the project to the educational community.

This entailed compilation of mailing lists for the following groups:

1. Public school administrators of Pennsylvania (This list included administrators of local school districts, county or intermediate unit offices and the Department of Education.);
2. Public school administrators of the U. S. (This list contained names of administrators of local school districts, county or intermediate

unit offices and the Department of Education.);

3. U. S. Office of Education (This list included administrators interested in and concerned with the activities of the study.);
4. ESEA, Title IV Regional Educational Laboratories;
5. Educational Research Information Centers (ERIC);
6. Research and Development Centers;
7. Professional Associations (Associations in the fields of education, public administration and management science.);
8. Universities (Departments of Educational administration, public administration and management science.): and
9. Publications (educational administration, public administration and management science).

An information brochure was prepared for dissemination at the progress report meetings in March, talks were delivered on study activities at several professional meetings and an extensive treatment of the EPPB System was given in a May seminar.

Survey of Education Information Systems (Task #7)

This task set about to survey the existing information systems in the following ways:

1. Identify channels of formal communication between local, county and state agencies, including reports, forms and other consistent, formatted data.
2. Determine the completeness and consistency of existing data within and among agencies.
3. Determine the capabilities of existing information processing groups.
4. Collect information on related current or past studies.

The foregoing survey included the State, County and local jurisdictions of Area 9 (Cameron, Elk, McKean and Cameron Counties) and Bucks County. The survey also included interviews with other agencies concerned with educational information systems. The types of information systems studied included:

1. Administrative record systems (accounting, budgeting, etc.);
2. Personnel record systems;
3. Student record systems;
4. Management and other information systems; and
5. External data sources used in planning educational activities (tax records, population data, etc.)

The primary method of study was personal interviews. The first interview was with Bucks County Administrators and data processing personnel. This enabled an initial gathering of forms and report formats.

After these data were analyzed an interview conducted with Department of Education personnel helped to determine that the information gathered in Bucks County was typical of other school systems in the Commonwealth.

The above two sets of interviews provided information as to what was actually being done in the information gathering process systems. This guide was then used to direct interviews in Area 9 and Bucks County to the more important features of information systems.

Study of Decision Input Factors (Task #8)

The purpose of this task was to identify potential activities of intermediate units and begin to identify types of decision factors to be incorporated in the EPPB System.

Six committees were formed representing the six services described in the "Report of the Pennsylvania State Board of Education," January 1967.

Participants on the committees were solicited from Area 9 and Bucks County.

The six committees were combined so that three groups totaling eight to ten persons each spent approximately five hours with a consultant who engaged them in dialogue to identify the following information:

1. Additional services not listed in the Report;
2. Action Programs, three (3) for each of the services; and
3. Decision information used to determine for the programs such factors as; yes or no, how much, when and where, etc.

The consultant performed the following functions:

1. Provided an orientation to the program. (The "big picture.")
2. Focused the group's attention on needed additional services.
3. Worked through at least one identified program and the decision factors related to that program so as to demonstrate the task. (Group centered activity.)
4. Provided individual consultation to participants in their effort to complete the task on their own and with their group.

Following the initial meeting, the groups met once more to consider the summarized results of the data collected at that first meeting. The purpose of this second conference was to draw inferences from the data and to examine decision concepts that may be employed to effectively determine the consequences for the alternate decisions that may be made for each program.

Survey of Community Characteristics (Task #9)

In order to identify the ranges of community characteristics which will form the EPPB System general environment in Area 9 and Bucks County through 1975, a survey of community characteristics was made. Using the available

statistical data, the economic, geographic and demographic (emphasis on K-14 school age population) characteristics of Area 9 and Bucks County from 1960 through 1975 were described and analyzed as follows:

1. Forecasts
   a. For 27 school districts:
      (1) Enrollment (K-14) total and public
      (2) Households and housing supply
      (3) Assessed value of real estate
   b. For 5 counties:
      (1) Total population and age distribution
      (2) Personal income
      (3) Labor force
      (4) Assessed value of real estate
2. Descriptive data - County basis:
   a. Economic
      (1) U. S. Censuses of Agriculture, Businesses and Manufacturing
      (2) Income distributions 1950-60, median income and total family income, 1950-60
      (3) Labor force by skill and industry, 1950-60
      (4) Pennsylvania Industrial Censuses: Industries by number of firms, employment, value added and payroll
   b. Geographic
      (1) Land use forest and reserve; urban, suburban and rural; major highways; airports and railroads
      (2) Topography areas of 25 percent slopes, ridge lines, rivers, lakes and sewer service areas

(3) Areas of influence, rural trading areas and centers, major roads, population density, public schools (elementary, secondary and higher) and non-public schools

Survey of Education System Characteristics (Task #10)

The objective of this task was to obtain comparable data to describe financial, staffing, physical facilities and educational characteristics of school systems in the proposed reorganized administrative units. The data was used to develop a base for linking the task to operations research.

The procedure was to survey, analyze and describe the local school administrative units in Bucks County and Area 9, with respect to finance, staffing, plant and educational offerings. Data were collected with the aid of five instruments which were distributed to the local administrative units in Bucks County and Area 9 as follows:

1. School Finance Study (Form 100)
2. Staff Personnel Data Form
3. Subject-Time Analysis, Grades K-6
4. Survey of Secondary School Course Offerings
5. School Plant Data Form

Treatment of the financial data takes into consideration budgeted revenue, expenditures, pupil membership, number of budgeted and non-budgeted personnel, staff salaries and tax parameters. Staff personnel data were used to analyze and compare numerical adequacy and deployment of personnel in each administrative unit who are engaged in administration, instruction and collateral service.

The educational program in the elementary grades was examined with regard

to the average time distribution devoted to program elements in the participating administrative units, while program data at the secondary school level were considered from the standpoint of breadth of course offerings available to students. An effort was made to relate relative adequacy of the program to such factors as school size and per pupil expenditures.

School plant data were used to describe provisions for housing the educational programs of participating districts. Consideration was given to the following:

1. Age of attendance units,
2. Site size,
3. Grade distribution,and
4. Utilization relative to capacity.

Survey of Education Performance Measures (Task #11)

The purpose was to identify measures of education performance potentially acceptable for incorporation in the EPPB System.

The intent was to survey, describe and analyze education performance measures used in Area 9 and Bucks County; explore, describe and analyze advanced education performance measures in use, under development and advocated in theory elsewhere in the United States; and define a preliminary set of performance measures for use in project.

A literature search was conducted by two persons, one who listed performance measurement references in addition to other education references, and one who concentrated specifically on education research literature, reading selected promising references in more depth.

A cursory survey was made of Bucks County schools and Area 9 schools, to determine what data each school collects routinely or has available on

separate parts of the school and education system. The survey was jointly conducted by personnel from Fels, Bucks County, and Area 9. Parts of the system that were considered, and some of the categories used in finding the available data were:

1. Students
   a. Physical health (how, when and frequency measured)
   b. Potential (maturity, intelligence and perception measures)
   c. Achievement (subjects, grades and special tests)
2. Teachers
   a. Qualifications - degrees, experience and certification
   b. Attrition rates and transfer data
   c. Pay scale and fringe benefits
3. Administration
   a. Personnel, (professional, clerical, maintenance, special services, planning and research, etc.)
   b. School Board - how selected
4. Curricula
   a. Subjects available in each grade
   b. Extra-curricular activities
5. Resources available
   a. Financial - tax rates and revenues
   b. Buildings - age, condition and capacities
   c. Equipment - recreational, laboratory, audio-visual, transportation, etc.
6. Community
   a. PTA
   b. Characteristics - socio-economic, population growth, etc.

Survey of Education Program Taxonomies (Task #12)

The purpose of this task was to identify education program taxonomies of potential utility in the EPPB System.

The approaches to development of this classification system were as follows:

1. Present practice in the study area can be surveyed by means of interview and document collection; and
2. Current and emergent practice can be identified in a national perspective by means of a literature search.

The first approach, a deductive approach, organization charts and budget documents of school districts constituted the most readily available source of information. Some districts had available as well position guides and summary staffing statements. Analysis of such documents permitted a detailed analysis of functions assigned as the responsibilities of particular offices. By use of either supplementary instruments or by deduction, an itemization of school district activities was developed in classified form.

The second approach to this problem, an inductive one, involved extensive efforts to identify all of the programs or services presently offered within school systems, without regard to the grouping of these activities. Apparent natural groupings were then used as the key to construction of a classification scheme. Once constructed this scheme was evaluated by review, by judgement of experienced administrators or by applying the opinions of expert consultants.

Because it seemed possible that neither an inductive nor a deductive approach alone would yield as accurate a portrayal of structure as desirable, a combination of the two approaches was used.

Survey of Current Research (Task #13)

This task set about to identify and establish continuing communications with current research projects of direct significance to design and development of the EPPB System. Current research projects in the United States related to this project, with emphasis on "intermediate unit planning," simulation of education systems, EPPB Systems, education performance measures, cost effectiveness techniques and evaluation of education systems were reviewed.

The objective was met by both direct surveys and by monitoring the work of other tasks, such as, the literature survey task. The task was carried out as follows:

1. All literature received by the project was monitored to identify the source of good, pertinent, current reports.
2. All project people who have taken trips were debriefed.
3. A list of relevant research projects was prepared and maintained.
4. The most relevant projects in the United States were identified by analysis of available documents.
5. A survey guide was prepared so that visits to other projects (Step 6) obtained as much information as possible. The guide used "inputs" from other tasks to determine what information was most useful.
6. The most relevant projects were visited and trip reports prepared.
7. All information was analyzed to identify those projects with which continuing liaison was desired.
8. Liaison with desired projects was established by: (a) seeing that appropriate people were hired as consultants; (b) seeing that symposia were scheduled and include appropriate people; and (c) arranging additional visits.

9. Incoming information was monitored to identify new projects and to continue the liaison process.
10. A report was prepared summarizing the "state-of-the-art" in ongoing research in relevant fields.

Literature Review (Task #14)

The purpose of this task was to provide bibliographic resources for the project.

The task objective was to organize and establish an annotated bibliography which supported the different project tasks. In this respect, the scope of the bibliography needed to be as broad as the project tasks themselves. The classification system for structuring the bibliography was designed around the various component tasks of the project. Annotations were provided which indicate the general nature of the topic(s) covered by the source and other comments which were appropriate to identify some element of particular importance in the source. A condensed and representative bibliography was compiled for use by the project participants in reviewing general background material. A resource index file was established and available for searching. The bibliographical search was conducted using already compiled resources of such agencies as the Educational Information Research Centers and Research for Better Schools Incorporated, and the combined "input" of all project participants.

Review of EPPB System Applications (Task #15)

In order to consolidate relevant experience gained to date in the application of EPPB Systems, applications of EPPB Systems in education and relevant applications in other fields were reviewed.

The initial survey identified those national, state and local agencies which are now operating under some form of a planning-programming-budgeting system which has relevance to the Intermediate Unit Planning Study. From among those identified, a representative number were chosen to visit in an effort to gain more detailed knowledge of their operation. Each of these was evaluated in terms of the elements in the system and the experiences encountered which could be considered important for the design of a EPPB System for the intermediate unit project.

The types of information collected and evaluated included:

1. What are the boundaries of the system?
2. How is the planning function performed and what role does it play in the overall system?
3. How is the programming function performed and what role does it play in the overall system?
4. How is the budgeting function performed and what role does it play in the overall system?
5. What part of the system is mechanical?
6. How is the decision process structured?
7. What evaluation measures are employed and what has been the experience to date with their use?

The method of data collection included use of questionnaires and direct interviews.

Review of Cost-Effectiveness Applications (Task #16)

The object of this task was to make available relevant experience gained to date in the application of cost-effectiveness techniques.

To accomplish this a review of applications of cost-effectiveness analysis in education and relevant applications in other fields was undertaken. Pertinent techniques for consideration in this project were determined and evaluated.

The approach used consisted of literature research and discussion with others in the field. An essential part of the discussion aspect was attendance at an Office of Education Symposium on "Operations Analysis of Education," held November 19 through 22, 1967, in Washington, D. C.

Define Major System Components (Task #17)

This task described the major functional characteristics of the EPPB System in relation to local school districts and intermediate units. It was based on project results to date: (1) review of local school district intermediate unit requirements for planning-programming-budgeting; (2) review of resources and constraints; (3) identification of major outputs to be produced by the proposed EPPB System; and (4) definition of the components of the EPPB System.

Plan Revenue Forecast (Task #18)

The purpose of this task was to plan for the development of a method of forecasting local school district and intermediate unit revenues over a ten year period. The revenue forecast method was operational by September 30, 1968, for use by local districts and intermediate units as inputs to the EPPB System.

Required outputs of a revenue forecasting method, development of a preliminary design for producing outputs, identification of required inputs, determination of information availability, preparation of a plan and work

program for development of the forecasting method and preparation of cost estimates for each activity and for each agency who participated in the development was identified. A plan for implementing the methods in local school districts and intermediate units was prepared. This task consisted of developing systems components (inputs, process, output) essential to estimating revenues over a ten year period.

Plan Student Forecast Development (Task 19)

This task's objective was to plan for the development of a method of forecasting student enrollment over a ten year period. This method was operational by September 30, 1968, for use by local districts and intermediate units as inputs to the EPPB System.

The identification of required outputs of a student forecasting method, completion of a preliminary design for producing outputs, identification of required inputs and determination of information availability were developed. The preparation of a plan and work program for development of the forecasting method, and preparation of cost estimates for each activity and for each agency who participated in the development of the methods was prepared. A preliminary plan for implementing the methods in local and intermediate unit school districts was completed before the end of Phase I.

Define Program Taxonomy (Task #20)

The purpose of this task was to provide a generalized program classification to be used in the EPPB System to summarize program plans for all local districts and intermediate units.

Task #12 findings were reviewed. This task was concerned with taxonomies of local districts. Following this review program taxonomy was defined that

embraces the major functional requirements of the proposed EPPB System. This task was completed before the end of Phase I.

Plan Indicator Development (Task #21)

This task's purpose was planning the development of an initial set of indicators representing characteristics of local school districts and intermediate units. Characteristics which were estimated to be of major importance to the chief administrative officers of these agencies in the conduct of long range planning and programming.

Project findings were reviewed and potential indicators of significant changes in education system characteristics were identified. A review of the availability of information for required inputs was also undertaken. A plan and work program for development of initial indicators for testing was used in Phase II of the study.

Describe Educational Planning-Programming-Budgeting Process (Task #22)

The aim of this task was to describe and relate the educational planning-programming-budgeting system process and procedures to the ongoing operations of local school districts and county offices or proposed intermediate units.

An analysis of existing budgetary and planning activities of local school districts and county offices was undertaken. This was used in planning the proposed EPPB System process in such a way as to meet requirements for preparation of long range plans and budgets in local districts.

Plan Analysis (Task #23)

The intent of this task was to define and plan for the development of feasible analytical methods required for imlementation of the proposed EPPB System.

Key components of the proposed EPPB System requiring analysis were identified. A methodology for performing these analyses was designed.

Complete EPPB System Design (Task #24)

The objective of this task was to describe the results of Phase I in terms of the design of the educational planning-programming-budgeting system recommended for development and implementation in the study.

A description of the operating characteristics of the proposed EPPB System design based on the findings of preceeding tasks was developed. The system outputs relevant to planning-programming-budgeting responsibilities of local school districts and county offices or intermediate units was described. Objectives of the study were identified relative to responsibilities of local school districts, county offices or intermediate units were also described.

Develop Phase II Work Program (Task #25)

The purpose of this task was to provide a revised plan and schedule for study activities to be accomplished during Phase II of the study and to revise the general plan and schedule for Phases III and IV of the study.

Results of Phases II and III Work Program

Phase I was devoted primarily to collection of data, examination of characteristics of educational systems, both county and local, exploration of planning alternatives and completion of the overall design of the EPPB System. Phase I began on June 1, 1967 and terminated March, 1968.

Phase II, completed in November, 1968, was concerned with the development of the operating EPPB System. This included the experimental pilot operation of the EPPB System prior to completion of system development and of plans for system implementation.

Phase III, completed in March, 1969, represents the period during which two of the participating county offices and six local school districts employed the EPPB System and related techniques in preparing their actual program and budgets.

Phases IV and V extended to the end of the Project, were devoted to analysis of the experiences gained in Phase III and revision, as necessary, of the EPPB System and related techniques. An education and training program for county offices and local school districts, as well as completion of final reports and materials for dissemination were also part of the last two phases of the project.

This chapter contains a discussion of the planning activities of Phase II and III, results of these activities, dissemination of results and effects on participating and cooperating educational organizations and institutions. The work program for Phases II and III was divided into separate tasks, which are shown on a work program network on the following page. In the sections that follow each task is described and the results discusses.

Phase II

Products of Phase II of the study include the following:

1. The initial general design report explaining the overall functioning of the EPPB System
2. Initial drafts of instructions and forms for operation of the EPPB System as well as program structure, indicators, enrollment and revenue forecasts and analytical techniques
3. General training activities for all project participants and specialized training for personnel of pilot districts
4. Assistance to participating districts in planning for long range development and electronic data processing and to pilot districts in

testing of the EPPB System

5. Evaluation of Phase II progress

Major activities for Phase II are summarized in the work program network on the following page.

Phase III

Products of Phase III of the study included:

1. A revised general design report incorporating revisions based on pilot test results
2. Revised instructions and forms for operation of the EPPB System developed during pilot implementation
3. Training in the use of EPPB System procedures for all project participants
4. Assistance to pilot districts in implementation of the EPPB System and continuation of assistance in long range planning and electronic data processing
5. Evaluation of Phase III progress

Task Descriptions and Results - Phases II and III

Conduct Phase II Information Program (Task #1)

Purpose: To communicate interim results of the planning and training of the project to the educational community within and outside of the Commonwealth of Pennsylvania.

Description: Dissemination of information relating to planning and training activities of the project through meetings and publications and revise the general information and education program.

Conduct Phase III Information Program (Task #2)

Purpose: To communicate interim results of the operational phase of the project to the educational community within and outside of the Commonwealth of Pennsylvania.

Description: Conduct workshops relating to EPPB procedures for county superintendents and education officials throughout the Commonwealth of Pennsylvania.

Tasks one and two were accomplished by:

1. Dissemination of the brochure "Program Planning Study for the Intermediate Unit in Pennsylvania."
2. Panel discussions held at American Association of School Administrators and American Management Association conferences by members of the study staff.
3. A training session for county staff personnel and representatives from the Department of Education held in Atlantic City.
4. Correspondence with interested school administrators throughout the county.
5. An information seminar for school administrators held in Philadelphia.

Assist School Districts in Long Range Development Planning (Task #3)

Purpose: To enable local school districts to complete their long range development plans as required by the Department of Education and thus to provide the long range planning basis for the EPPBS.

Description: Provide assistance to local school districts in Area 9 and Area 22 in completing long range development plans. Develop a data base and projections of socio-economic and educational information for participating districts; collect additional information for use in testing the EPPB System in those districts participating as pilots.

This task was continued througout the project. Data were revised and updated as the study progressed.

Assist School Districts in Analysis and Planning EDP (Task #4)

Purpose: To facilitate development of educational data processing systems for use by school districts and intermediate units in the implementation of the EPPBS.

Description: Assist cooperating school districts in planning and preparation for conversion of pupil personnel sub-system for use during the 1969-70 school year.

Four districts, two from Area 9 and two from Bucks County participated in a one year pilot project during which the pupil personnel sub-system was tested. Data processing procedures were evaluated, using manual procedures as a control.

Eight districts, two from Area 9 and six from Bucks County, participated in these tests during the ensuing year.

Develop Initial Student Enrollment Forecasting Methods (Task #5)

Purpose: To provide a method of forecasting student enrollment over a ten year period for use by local districts and intermediate units as inputs to the EPPB System.

Description: Develop tentative methods, test and apply these in pilot school districts, and provide necessary instruction and recommendations for accomplishing regular annual forecasts in conjunction with the EPPB System.

This task has been completed and is part of the revised procedures manual (Version I Model II). Enrollment forecasts have been distributed to all of the local school districts participating in the study. Experience with these will provide a basis for evaluating and modifying data and procedures employed in their determination.

Develop Initial Revenue Forecasting Methods (Task #6)

Purpose: Develop a method of forecasting or estimating local and intermediate unit revenues over a five year period for use as inputs to the EPPB System.

Description: Develop, test and apply to pilot districts a method of estimating revenues for each year of the ensuing five year period, and provide instructions and recommendations for regular preparation of revenue forecasts as a part of the annual EPPB System.

This task has been completed and was incorporated into the procedures manual, (Version I, Model II). All pilot school districts and county units participating in the study have received revenue forecasts.

Develop Tentative Indicators (Task #7)

Purpose: To provide an initial set of indicators representing characteristics of local and intermediate unit districts which are of potential importance to local and intermediate unit superintendents in the conduct of planning-programming and budgeting.

Description: Develop, test and apply in pilot districts a set of indicators for trial in the EPPB System, and provide instructions and recommendations for the regular preparation of indicators as a regular part of the annual EPPB cycle.

A preliminary set of indicators has been developed and is part of the procedures manual in Version I, Model II.

EPPBS Design Report (Task #8)

Purpose: To provide a description of the general design of the planning-programming system to be developed and implemented in the project.

Description: Revise and publish the general design report for use by project participants during development and pilot implementation of the EPPBS.

The EPPBS Design Report has been completed and the results have been disseminated to selected personnel.

Select Pilot School District (Task #9)

Purpose: To select those school districts and counties which will serve during the pilot phase of the project.

Description: Contact interested counties and local school districts in Area 9 and Area 22, select those districts and county offices which will participate during the pilot phase of the project and obtain appropriate formal agreements from those districts.

Six local school districts and two county offices agreed to participate as pilots to test the feasibility of implementing the EPPB System. They were the following:

Area 9

Smethport School District
Port Allegany School District
Cameron County School District
McKean County Superintendent's Office

Bucks County

Morrisville School District
Central Bucks School District
Pennsbury School District
Bucks County Superintendent's Office

Develop Initial Procedures (Task #10)

Purpose: To provide the initial procedures for carrying out the EPPBS process.

Description: Develop the overall system flow with identification of specific procedures to be accomplished and provide general forms and instructions for carrying out each of the procedures.

Develop Initial Analytical Techniques (Task #11)

Purpose: To provide analytical techniques to be utilized in the EPPBS.

Description: Develop formal techniques of analysis to be utilized during the staff application of the EPPBS, including recommendations for further research and development where appropriate.

Tasks ten and eleven provided the basic information and procedures for the development, testing and refinement of the procedures manual Version I, Model II.

Test and Modify a Simulation Model (Task #12)

Purpose: To provide a means of predicting school system characteristics based on given input and process variables.

Description: Modify the existing simulation model (AD1.5) to accommodate the EPPBS design including program structure and data inputs.

The effort, originally planned for the development of a simulation model has been abandoned in favor of the development of a "batch process" automation of the procedures manual Version II, Model I. This version of the manual

actually serves as a small simulator allowing different alternatives fed into the system to be retrieved and analyzed in a relatively short period of time.

Collect Data in Pilot School Districts (Task #13)

Purpose: To obtain the data from pilot school districts necessary for staff application of the EPPBS.

Description: Collect from each of the pilot school districts, and the county offices, the data required for revenue and enrollment forecasts, for calculation of indicators, and for general planning-programming and budgeting requirements.

Plan Staff Application of EPPBS Task #14)

Purpose: To plan and schedule the activities required for the application of the EPPBS by project staff.

Description: Plan, schedule, and arrange for data collection as required from pilot districts and for initial application by the project staff of the EPPBS.

Staff Application of EPPBS Using Pilot District Data (Task #15)

Purpose: To test the initial EPPBS design and to provide opportunities for modification of procedures on the basis of experience in pilot school districts.

Description: For each of the pilot districts, carry out the EPPBS process including the preparation of input forecasts and illustrative plans, programs and budget summary.

In tasks thirteen, fourteen and fifteen, preliminary data from pilot districts were collected for the initial application and test of the EPPBS design. This experience has also served as a means for training the study staff to implement and field test the system with the pilot districts.

Revise Procedures and Instructions (Task #16)

Purpose: To refine the general design and procedures instructions on the basis of staff experience wi th the field tests.

Description: Review and modify as necessary, procedures and instructions for all elements of the EPPBS in accordance with the results obtained during the staff application of the system.

Information from the study staff was used to develop the initial procedures manual (Version I, Model I), This manual was then used by pilot districts to implement the EPPBS design's field test.

Plan Test of EPPBS by Pilot Districts (Task #17)

Purpose: To prepare for effective testing of the EPPBS by school administrators.

Description: Plan, schedule and arrange a series of workshop sessions during which administrators from the pilot school districts will perform a trial application of the EPPBS as revised.

Twelve days of training (six in Area 9 and six in Bucks County) were planned and completed during the month of November in order to prepare the pilot districts to field test the EPPBS design and procedures manual.

Implement Pilot District Test (Task #18)

Purpose: To involve school administrators in testing of the EPPBS.

Description: Conduct a series of workshop sessions in Area 9 and in Area 22 for testing revised materials, and instructions by administrators from the pilot districts.

The study staff worked with each of the pilot districts on a flexible schedule in order to meet each participating district's individual needs. All of the pilots have completed the full cycle of the EPPBS design.

Test Initial Simulation Model (Task #19)

Purpose: To evaluate the simulation model and to identify those aspects in which improvement is required.

Description: Test the initial simulation model using the data from one or more of the pilot school districts and evaluate the strength and weaknesses of the simulation model both technically and operationally from the point of view of school administrators.

The effort for this task was diverted toward completing the automation of the procedures manual (Version II, Model I). A batch process automation of the manual, has been field tested by the pilot districts and found to be acceptable following minor modifications.

Design Advanced Simulation Model (Task #20)

Purpose: To design a simulation model capable of relating school system performance to resource allocations at least at a rudimentary level.

Description: Design a simulation model based on experience gained during staff application of the initial EPPBS design and on results of the tests of the initial simulation model as they become available. The model should incorporate a provision for estimating the effect of policies on program costs and educational system performance.

The time designated for this task was re-allocated to planning for an on-line version of the batch process automation of the procedures manual. This version concentrated on developing the system to include on-site terminals at each school district with a capability of conversing with the central computer.

Conduct Training Program (Task #21)

Purpose: To inform project participants other than pilot school districts of findings and progress being made in the study.

Description: Disseminate project reports and information, and carry on individual liaison with superintendents and other officials of participating school districts.

This task was accomplished through the day to day administration of the project, intermittent contact with project participants and meetings of the various committees.

Plan Training Program for Pilot District Personnel (Task #22)

Purpose: To plan a training program which will enhance the ability of pilot district personnel to test and implement the EPPBS.

Description: Plan, schedule and arrange a series of one-day seminars for pilot district personnel in Area 9 and Area 22 covering all necessary aspects of the EPPBS concepts, procedures, and techniques.

Several seminars were planned to increase the capability and knowledge of pilot district personnel. The first session, from February 28 through March 2, 1968 was held for all pilot district personnel as well as the entire study staff. Subsequent meetings were held for the same purpose in the respective pilot districts.

Evaluate Pennsylvania Quality Education Assessment Program (Task #23)

Purpose: To determine the degree to which the methods and results of the Pennsylvania Quality Education Assessment Program should be incorporated in the EPPBS.

Description: Study the methods, results, and findings of the Pennsylvania Department of Education Quality Education Assessment Program in terms of the applicability of the goals and measures developed in that program to use by local school districts and intermediate units or county offices as indicators of educational results, and recommend to what extent (if any) the EPPBS should incorporate such goals and measures.

Progress of the Quality Education Assessment program was monitored. A study correlating the ten goals of Quality Assessment Program with the indicators used in the project was completed (see Appendix A).

Conduct Training Program for Pilot District Personnel (Task #24)

Purpose: To provide pilot district personnel with the knowledge and skills required for testing and implementation of the EPPBS.

Description: Conduct the training program planned in Task #22.

This training program which extended into Phases IV and V, has been completed.

Plan Phase III Training and Information Program (Task #25)

Purpose: To plan for information activities to be carried out in Phase III.

Description: Plan, schedule and arrange for activities to inform the project participants of the result of Phase II activities and to inform them of progress during initial actual implementation of the EPPBS by the pilot districts.

Continuous training and planning for dissemination of progress and results of pilot activities were provided.

Monitor Progress and Evaluate Phases II and III (Task #26)

Purpose: Provide internal and external project evaluation.

Description: Monitor progress of the project through formal and informal means and plan and conduct an evaluation of Phases II and III activities in terms of technical results and pilot school district acceptance.

Conduct Phases II and III Administration (Task #27)

Purpose: Provide necessary administrative support for Phases II and III activities.

Description: Organize and carry out accounting, reporting, planning, coordinating, and clerical operations.

Tasks 26 and 27 were accomplished as a result of the day to day operation. Version I, Model II, the revised procedures manual, is an example of the evaluation of feedback from personnel involved in the implementation and field testing of the EPPBS design.

Phase IV

Phase IV covered the period from March 3, 1969 through August 29, 1969 and included Tasks 1.0 through 18.0

Continue Field Test-Version I, Model 1 (Task 1.0)

Purpose: Test the manual version of the EPPB System.

Description: Field testing of the manual version with the two pilot county offices and six pilot school districts was completed according to the work schedules established by each technical man with the pilots with which he was working. This task was completed during the month of May 1969.

Continue Development of Version I, Model 2 (Task 1.1)

Purpose: Develop intermediate unit and school district documentation of the modified manual version of the EPPB System.

Description: Final rough drafts were prepared of the EPPBS Procedure Manual - Version I, Model 2 for reproduction. Model 2 was based on the results of the field testing of Version I, Model 1. This task was completed during the month of April 1969 and served as the basis for the final version of the procedural manuals.

Reproduction of Version I, Model 2 (Task 1.2)

Purpose: Produce enough copies of EPPBS Procedures Manual - Version I, Model 2 for the county offices and school districts in the study area and for the individuals participating in the seminar in August 1969.

Description: A proofing and production work schedule was developed for the month of June 1969. The method of reproduction and general set up of the manual, were determined and the printer contacted. This task was completed during the month of June 1969. Copies of the manuals were distributed to all school districts located within the study area.

Continue Field Test-Version II, Model 1 (Task 2.0)

Purpose: Test the semi-Automated batch-process version of the EPPB System.

Description: Finish the field testing of the semi-automated batch-process version with the two pilot county offices and six pilot school districts according to the work schedules established by each technical man with the pilots with which he is working. The semi-automated batch-processing version was successfully field tested during the months of April and May of 1969

Continue Documentation - Version II, Model 1 (Task 2.1)

Purpose: Develop intermediate unit and school district documentation of the semi-automated batch-process version of the EPPB System.

Description: Prepare final rough drafts of the EPPBS Documentation Manual-Version II, Model 1 for reproduction. The development of the manual is based on results of the field testing of the semi-automated batch-process version with the two pilot county offices and the six pilot school districts. The rough draft of the documentation Manual was completed during May.

Reproduction of Version II, Model 1 (Task 2.2)

Purpose: Produce enough copies of the EPPBS Documentation Manual - Version II, Model 1 for the county offices and school districts in the study area and for the individuals participating in the seminar in August 1969.

Description: Determine the method of reproduction, general set up of the manual, identify the printer, and contract with the printer for reproduction. The manual was printed and distributed to clients late in June.

Begin Development of Version II, Model 2 (Task 2.3)

Purpose: Develop limited improvements to the semi-automated batch-process version.

Description: Develop a number of improvements in Version II, Model 1. The purpose is to produce an improved version (Version II, Model 2) to be field tested in one county office and one school district. This task was not completed, however some modifications were made in Version II, Model 1 as a result of field testing.

Continue Development of Version III, Model 1 (Task 3.0)

Purpose: Develop a demonstration on-line version of the EPPB System.

Description: Design a demonstration EPPBS on-line version that will be capable of processing data from the educational units in the study area. This version was produced and was demonstrated during an August seminar.

Preparation of Expanded Set of Indicators (Task 4.0)

Purpose: Develop a reference list of indicators for intermediate units and school districts.

Description: Input process and output indicators were devised by the study staff and collected from published and unpublished sources. Although a special effort was made to locate suitable output indicators for which norms had been established the list of these was not greatly expanded. Efforts to devise new indicators was impeded by lack of stated objectives of the clients.

Final Specification and Definition of Data Files - Source and Content (Task 5.0)

Purpose: Specify and define the source and content of the data files required for the EPPB System developed in the study.

Description: Examine the data requirements of the manual and semi-automated batch-process versions. Identify the data types required and group the data types into a limited number of manual data files. The files were so organized as to be capable of automation. This task was completed by the end of July.

Definition of Each EPPBS Program (Task 6.0)

Purpose: Each of the twenty-three programs will be defined in sufficient detail to allow for a more accurate specification and definition of objectives and allocation of resources by program.

Description: The definition of each program was based on the experience gained in the field testing of the system and information found in a search of the literature. It was found to be impracticable to define programs and identify objectives and resources using universal criteria. This task was accomplished ad hoc in consultation with clients as data was collected and assembled.

Development of EPPBS Seminar (Task 8.0)

Purpose: Provide an intensive training program for study area educational unit personnel interested in implementing the EPPB System during the 1969-70 school year and for educational unit personnel in Pennsylvania and throughout the nation who are interested in receiving training in the techniques and procedures of the EPPB System developed in this study.

Description: The seminar was an intensive training session in all aspects of the EPPB System procedure developed in this study. The seminar consisted of both lecture and work sessions and provided adequate opportunity for participants to consult with the lecturer concerning the system and its relevance to their particular planning problems. The participants were provided with a packet of

materials on both the manual and semi-automated batch-process versions. Notification of the seminar was sent to all educational units within the study area, all educational units in the Commonwealth of Pennsylvania, and interested educational units and professionals throughout the country. This work was completed by August 1.

Conduct EPPB System Training Seminar (Task 8.1)

Purpose: Carry out a training seminar on the EPPB System developed in the study.

Description: The seminar was conducted from Monday through Friday during the week in August 1969. The seminar began at 9:00 A.M. and terminated at 4:40 P.M. except Friday when it terminated at 1:00 P.M. Three evening sessions were held; one on Monady, one on Wednesday and one on Thursday. The evening sessions were from 7:00 P.M. until 9:00 P.M. This seminar was held as scheduled and was supplemented by additional sessions held in October. The seminars were attended by clients, staff personnel and interested educators from as far away as California, Canada, and Venezuela.

Preparation for Pilot Debriefing Session (Task 9.0)

Purpose: Prepare and schedule meetings for the debriefing of the two pilot county offices and six pilot school districts.

Description: Debriefing meetings were to be planned and scheduled with each pilot educational unit by the technical staff member working with the unit. The meeting was to cover the progress of the unit through the EPPBS cycle. The Case History Report for the pilot was to form the basis for the meeting. The work schedule for the 1969-70 school year cycle was to be tentatively established for pilot at this meeting. This work was completed in consultation with pilot units.

Conduct Pilot Debriefing Session (Task 9.1)

Purpose: Conduct the debriefing meetings with the two pilot county offices and six pilot school districts.

Description: Each debriefing meeting should be carried out according to the plan developed in Task 9.0 for each pilot educational unit by the technical staff member assigned to the pilot. Sessions devoted to this function were held in the field.

Preparation for Second Year Training Session for Implementing County Offices and School Districts (Task 9.2)

Purpose: Prepare and schedule the training program for the educational units who will implement the EPPBS for the second year.

Description: Prepare and schedule the training program for the educational units who wish to cycle the EPPBS for the second time. Technical help was available to the educational units on a limited basis throughout the cycle. EPPBS - Version II, Model 1 was used as a basis for this activity.

Conduct Second Year Training Session for Implementing County Offices and School Districts (Task 9.3)

Purpose: Conduct the training sessions for all county offices and school districts going through the EPPBS for the second cycle.

Description: The training sessions will be conducted according to the schedule established in Task 9.2. Variations in this schedule may be necessary because of problems that arise during the EPPBS cycle.

Selection of New First Year Implementing County Offices and School Districts (Task 10.0)

Purpose: Select a group of educational units in the study area that wish to implement the EPPB System.

Description: Meet with those county offices and school districts in the study area that express a definite interest in implementing the EPPB System during the 1969-70 school year. The educational unit selected should be willing to provide substantial professional, clerical, and general support to the field staff. Two school districts in Montgomery County were added to the pilot group.

Preparation for First Year Training Session for New Implementation (Task 10.1)

Purpose: Prepare and schedule the training sessions for the educational units selected to implement the EPPB System for the 1969-70 school year.

Description: Prepare and schedule the training program for the implementing of educational units. An intensive training program was established for August 1969 followed by two additional work programs. The first work program was held in October 1969 and was concerned with the specification and definition of objectives, setting of indicator levels, and identification of constraints. The second work program was set for November and December and was concerned with project design. Additional assistance was provided by the field staff during the entire cycle.

Conduct First Year Training Session for New Implementing County Offices and School Districts (Task 10.2)

Purpose: Conduct the training session for all county offices and school districts implementing the EPPB System for the first time.

Description: The training program was conducted according to the schedule established in Task 10.1. Variations in this schedule were necessary.

Plan Phase V Training Program (Task 11.0)

Purpose: Develop a plan to coordinate the training activities spelled out in Tasks 9.2 and 10.1 for implementing educational units.

Description: The training activities for the second year and first year implementing educational units were tied together into a coordinated plan for Phase V.

Preparation of Continuation Grant Request (Task 12.0)

Purpose: Prepare the 1969-70 Continuation Grant Request for submittal to the Department of Education.

Description: The request for continuation of the project was prepared in accordance with the federal guidelines. A sufficient number of copies of the request were prepared to provide a copy for each member of the County Superintendents Committee, each school at the University of Pennsylvania, Department of Education, and U. S. Office of Education.

Conduct Phase IV Information Program (Task 13.0)

Purpose: Disseminate information on the study activities to date.

Description: No formal plan was established for this task because of the number of responses for information received by the Division of Research and Planning of the Bucks County Superintendent of Schools Office and the various schools at the University of Pennsylvania. Approximately six hundred requests for information were received. Covering letters and copies of the "Design Booklet" were sent to correspondents. Two separate presentations of the EPPB System were made - one at the AASA Convention in Atlantic City in February 1969 and the other at an AMA Convention in New York in March 1969. A EPPBS Training Seminar was held August 1969. Selected board members and administrators in the Commonwealth of Pennsylvania and throughout the nation were also asked to participate. Journal articles were released during Phase IV.

Plan Phase V Information Program (Task 13.1)

Purpose: Develop a general plan for disseminating information on the progress of the study.

Description: Dissemination of information was provided through mailing of progress reports, working papers and technical manuals as well as through speeches, consultations, published articles and seminars.

Evaluation of Phase IV (Task 14.0)

Purpose: To assure that the EPPB System under development receives maximum possible benefits from the technical development and field testing.

Description: The study activities were monitored continuously by the technical and general administrators. Technical Staff meetings and conferences were held on a regular basis for the purpose of discussing problems that related to technical development and field testing of the system.

Plan Phase V Evaluation (Task 14.1)

Purpose: Develop a general plan for the monitoring of Phase V activities in the study.

Description: A plan was developed for the establishment of a series of technical meetings. As stated previously in Task 14.0, these meetings along with the informal conferences provided the basis for evaluating progress in the technical development and use of the EPPB System in the field. Improvements in technical development and implementation efforts in the field grew out of these meetings and conferences. Plans were examined during this task for the final evaluation of the study.

Continue Long Range Planning Assistance to School Districts (Task 15.0)

Purpose: Enable local school districts to complete their long range development plans as required by the Department of Education and provide a long range planning base for use with the EPPB System.

Description: Assistance was provided to school districts in gathering and analyzing data for long range development plans. Pilot districts were given intensive support in developing educational and socio-economic data for use both in the EPPBS and development of plans required by the Department of Education.

Operate Expanded EDP System (Task 16.0)

Purpose: To facilitate development and use of EDP systems for use by school districts and intermediate units in the implementation of the EPPB System.

Description: Nine cooperating school districts were assisted in planning and preparating for conversion of the California Pupil Personnel Sub-system for use during the 1969-70 school year. The same districts became the nucleus for a permanent Regional Educational Data Processing Information Center in Bucks County and serving a larger area.

Conduct Phase IV Technical Administration (Task 17.0)

Purpose: Provide the necessary administrative support to the technical staff for the conduct of the technical activities and supervise the development of these activities.

Description: Accounting, reporting, planning, coordinating, and clerical operations were organized and conducted to service the project.

Conduct Phase IV General Administration (Task 18.0)

Purpose: Provide the necessary administrative support for Phase IV field activities and supervise these activities.

Description: Accounting, reporting, planning, coordinating, and clerical operations were organized and conducted.

Phase V

Phase V took place during the period beginning September 1, 1969 and ending May 29, 1970. The tasks included were Tasks 1.0 through 15.0.

Second Cycle of EPPBS with School Districts and County Offices (Task 1.0)

Purpose: Assist the school districts and county offices in the original pilot group to cycle the planning system for the second time.

Description: Each school district and county office assisted in establishing a work schedule for cycling through the EPPB System in accordance with the time schedule outlined in the manuals. Pre-cycling orientation was provided where necessary. A case history was prepared by members of the technical team working directly with the pilots. The case history was used by the study staff to help administer and manage the re-cycling operation.

First Cycle of the EPPBS with School Districts (Task 2.0)

Purpose: Assist two school districts in Montgomery County in making their first cycle of the planning system.

Description: Each school district was to be assisted in establishing a work schedule for cycling through the EPPB System in accordance with the time schedule outlined in the manuals. Precycling orientations were provided where necessary. A case history was to be prepared by members of the technical team working directly with the pilots. This task was not completed since the two school districts in Montgomery County decided not to participate in the study.

Preparation of Improvements in the EPPBS, Version II, Model 1, for School Districts and Intermediate Units (Task 3.0).

Purpose: Complete the necessary improvements to the batch-process version of the planning system.

Description: Procedures for updating enrollments, projecting costs and generating the first year budget were developed. General papers on the "Procedure for Generating the Y-1 Budget for School Districts and Intermediate Units" and "Procedure for Projecting Costs of Projects to Up-Date for Enrollments and Inflation Charges for School Districts and Intermediate Units" was prepared. Specifications for the data files for the EPPBS, Version II, Model 1 for school districts and intermediate units was completed. The improvements and the contents of the above mentioned papers and specifications was incorporated in an Addendum that was prepared for the manuals.

Conversion of the EPPBS, Version II, Model 1 for School Districts and Intermediate Units to the Bucks County Computer System (Task 4.0)

Purpose: Convert the present program now being operated on the University of Pennsylvania's computer system to the Bucks County System.

Description: A conversion work schedule was established to allow adequate time for re-programming, testing, and debugging. Work proceeded which resulted in conversion of the batch-processing to the Bucks County computer operation.

October 27-31 EPPB System Workshop (Task 5.0)

Purpose: Present the EPPBS Workshop

Description: Changes in the study materials and programs were examined and priorities established as to what changes were absolutely

essential for successful operation of the second workshop. A work schedule was established to complete these changes, prepare and mail materials and carry out all physical preparations for the workshop. Approximately forty-five people from United States and Canada attended the workshop. A formal evaluation was completed at the termination of the workshop by the technical staff involved in the program.

Seminars on Objectives and Constraints and Project Design (Task 8.0)

Purpose: Develop and present seminars dealing with the problems of establishing objectives and identifying constraints and the design of operations and capital improvements projects.

Description: Schedules for the preparation of materials and physical arrangements for two seminars were planned. The first seminar was to be given on October 23-24, 1969. These two seminars were merged to provide for intensive study of the logistics of converting County Units to Intermediate Units. This was required because of the impending action of the General Assembly in requiring implementation of the Intermediate Unit Plan. The second seminar was to be given on November 20-21, 1969 and was to be concerned with the design of operations and capital improvements projects.

Prepare Technical Report on EPPBS, Version III, Model 1 (Task 7.0)

Purpose: Complete a technical paper describing the development, testing, and relative merits of the on-line version as compared to the batch-process version of the EPPB System.

Description: The format, content, and production schedule for the paper was developed in relation to the decisions concerning the format, content, and work schedule for the final technical report. The paper contains a complete description of the on-line version. A discussion of the testing of the version is contained in the paper along with an examination of the strengths and weaknesses of the version as compared to the batch-process version. Additional research and development possibilities also form a part of the report.

Prepare Technical Report on the Study (Task 8.0)

Purpose: Complete a final technical report summarizing the technical development in the study and identify additional research and development activities that should be undertaken.

Description: The format, content and production schedule for the paper was developed in early December. The report contains a complete summary of the technical development in the study and recommendation for future research and development.

Prepare End of Study Report (Task 9.0)

Purpose: Complete an end of study report for the Department of Education and the U. S. Office of Education, describing Phases IV and V activities of the study in detail and providing an overall summary of the three years of the study.

Description: The format, content, and production schedule for the report was developed in April. The report contains a detailed description of the Phases' activities along with a general description of the total study effort.

Dissemination of Information (Task 10.0)

Purpose: Disseminate information on the study during Phase V.

Description: Dissemination of information was provided through mailing of progress reports, working papers, and technical manuals as well as through speeches, consultations, published articles and during seminars.

Evaluation of the Study (Task 11.0)

Purpose: Evaluate the study in terms of whether or not the objectives stated in the original proposal were achieved.

Description: A design for the final evaluation was established the first year of the study. This design governed the final evaluation of the study.

Complete Long Range Planning Assistance to School Districts (Task 12.0)

Purpose: Enable local school districts to complete their long range development plans as required by the Department of Education and provide a long range planning basis for use with the EPPB System.

Description: Provide assistance to school districts in Area 9 and Area 22 in the completion of their long range development plan reports in terms of socio-economic and educational data gathering and analysis. Special attention was paid to those districts participating as pilots.

Complete Expansion of Bucks County EDP system (Task 13.0)

Purpose: Facilitate the development and use of the Bucks County EDP System by school districts and county offices or intermediate units in the implementation of the EPPB System.

Description: The implementation of the Regional Educational Data Processing Information Center was continued during the 1969-70 school year with nine local school districts.

Complete Technical Administration (Task 14.0)

Purpose: Provide the necessary administrative support to the technical staff for the conduct of the technical activities and supervise the development of these activities.

Description: Organize and carry out accounting, reporting, planning, coordinating, and where necessary, clerical operations.

Complete General Administration (Task 15.0)

Purpose: Provide the necessary administrative support for Phase V field activities and supervise these activities.

Description: Organize and carry out accounting, reporting, planning, coordinating and clerical operations.

CHAPTER III

EPPBS TECHNICAL DEVELOPMENT ACTIVITIES

Introduction

The technical work tasks of the Intermediate Unit Planning Study were divided into five phases accomplished over a three year period beginning June 1, 1967 and ending May 31, 1970. Phase I was devoted primarily to: (1) research; (2) examination of the status of the educational system at the local school district and county levels in the study area; (3) determination of their planning requirements; (4) analyses of the Educational-Planning-Programming-Budgeting requirements; and (5) completion of the general design of the EPPB System. Phase I began on June 1, 1967 and was terminated at the end of March 1968.

Phase II began in early April 1968 and was completed at the end of November 1969. This phase was concerned with the development of the first manual operating school district and the intermediate unit EPPB Systems (Version I, Model 1). An automated version (with computer output provided by a batch process mode rather than an on-line mode) for school districts and intermediate units was started during this phase (Version II, Model 1). This version was designed to automatically handle all the major computations of Version I, Model 1. Finally, work was begun on the development of a simulated on-line version of the school district EPPB System (Version III, Model 1) during this period.

Phase III began in early December 1968 and was terminated in late March 1969. The major portion of the field testing and the resulting modifications of Version I, Model 1 and Version II, Model 1 for school

istricts and intermediate units was completed during this phase. Because
f the many modifications that were made in Version I, Model 1 during this
eriod it was hereafter referred to as Version I, Model 2. Detailed pro-
edures and modified documentation embracing all of the changes grc out
f the first field test were begun during this phase. An intensive two-day
orkshop was held in Atlantic City for key study participants and members
f the Pennsylvania Department of Education to review these changes and to
ermit participation in a simulated cycle of the EPPB System for school
istricts.

For the remaining 15 months the study was revised and subdivided into
wo phases (IV and V), instead of the one previously planned, because of
he results obtained during Phases II and III. Phase IV began in early
arch 1969 and terminated in late August 1969. This phase was devoted to
ompleting the first field test and the detailed modifications of Version I,
odel 1 and Version II, Model 1 of the school district and intermediate unit
f the EPPB Systems. As noted previously, Version I, Model 1 after these
odifications became Version I, Model 2.

Development on the simulated version of the school district EPPB Systems
Version III, Model 1) continued at a more intensive pace. A four and one-
alf day workshop, covering all materials developed to date, was prepared
nd presented during the month of August. This workshop was attended by
epresentatives from school districts and county offices in Pennsylvania, as
ell as representatives from school districts and county offices of other
tates.

Phase V, which began in September 1969 and terminated at the end of
ay 1970, saw the completion of the second field test of the school district

and intermediate unit EPPB Systems (Version I, Model 2 and Version II, Model 1). The development and testing of Version III of the System was completed during this phase. A second workshop was held in October 1969 and included a wide range of participants representing various levels of public education both within and outside the Commonwealth of Pennsylvania. A number of additional technical documents were developed during this period.

The study was officially concluded on May 31, 1970. However, several tasks remained to be accomplished: (1) reprogramming of Version II, Model 1 for school districts and the Pupil Population Forecaster to run on a smaller computer system which was completed August 1970; and (2) the final technical report and accompanying addendum completed in early September 1970. The reprogramming of Version II, Model 1 for the intermediate unit could not be accomplished within the funding constraints of the study.

Each phase of the study is dealt with in more detail below. The phases were subdivided into tasks and the tasks into activities. A detailed discussion of the tasks may be found in the two continuation grant requests dated March 1968 and March 1969, which are on file in the Office of the Bucks County Intermediate Unit. For an extended discussion of the activities under each task and the inevitable changes that occur in any work program of this magnitude it would be necessary to contact Dr. Albert M. Neiman, Study Director, Bucks County Intermediate Unit or Dr. C. E. Brewin, Jr., Education Systems Program Manager, Government Studies & Systems, Inc.

The discussion of the technical work below identifies the relevant task numbers and publications that contain the findings and results of some of these tasks. However, most of these publications can only be made available by photo copying the copies on file in the offices of the Bucks

County Intermediate Unit or Government Studies & Systems, Inc.

PHASE I

The technical tasks in this phase were established to accomplish several objectives:

(1) Complete reviews of the relevant literature, research in planning-programming-budgeting, and cost-effectiveness applications;

(2) Complete surveys of the educational information systems, community characteristics, educational characteristics, and performance measures of the school districts in the study area;

(3) Complete examination of existing and emerging program taxonomies;

(4) Identify and specify the basic components of the school district and intermediate unit EPPB Systems and specify the planning processes for each system; and

(5) Develop the general design report.

The technical work began with a review of the literature (Task #14). The objective of this task was to organize and establish an annotated bibliography for the support of the various tasks during this phase. The system for structuring the bibliography was keyed to these tasks. Annotations were provided which generally indicated the nature of the topic or topics covered by the source and other comments which were useful in identifying some element of particular importance in the source. A condensed and representative bibliography, "Survey of Current Literature", was compiled for use by the project participants in reviewing general background material.

An identification of the current research projects of direct significance to the design and development of the EPPB System was accomplished and direct contact was maintained with these projects throughout this phase. Particular emphasis was given to research projects that had a direct relationship to intermediate unit or educational service agency planning, simulation of educational systems, educational performance measures, cost-effectiveness techniques and evaluation of educational systems. The results of this survey may be found in the report, "Survey of Current Research."

In order to benefit from relevant experience in the application of planning-programming-budgeting system techniques and methods in education and other fields, Task #15, "Review of Planning-Programming-Budgeting System Applications" was established. This review identified those national, state, and local agencies which were, at that time, operating under some form of a planning-programming-budgeting system. A select number of these efforts were chosen and on-site visits were made to gain more detailed knowledge of their operation. Each of these efforts was evaluated in terms of: (1) the elements presumed necessary for the EPPB System and (2) the experiences the individuals had gained in these efforts which would condition the design of the EPPB System. "The Review of PPBS Applications" report contains information derived during this task.

Task #16 was dedicated to the review of cost-effectiveness applications relevant to the development of the EPPB System. The review was accomplished through library research, discussion with recognized authorities in the field and attendance at a symposium at the U. S. Office of Education entitled "Operations Analysis of Education", held in November 1967. Results of this effort may be found in the report, "Review of Cost Effectiveness Applications."

A survey and literature search were undertaken of performance measures

(Task #11) acceptable to the EPPB System. The pilot school districts were surveyed to determine the routinely collective data useable to develop measures. The results of this survey are reported in "Survey of Educational Performance Measures."

Task #12 was concerned with a survey of educational program taxonomies. The purpose of this effort was to identify educational program taxonomies of potential utility to the EPPB System. This was accomplished by examining present practices in the study area and reviewing current and emerging practices as revealed in an intensive literature search. The information gained in this task was necessary to the development of a general program structure for school districts and intermediate units in Pennsylvania (Task #20). Information on this task may be found in Appendix A of the "EPPB System Procedures Manual for School Districts, Version I, Model 2, Volume II" and the report, "Survey of Educational Program Taxonomies."

A survey of the information systems in the school districts and county offices in the study area was undertaken in Task #7. The purposes of this survey were:

1. To determine current means of formal communication between local, county, and state agencies. (Communications include reports, forms and other consistent, formatted data).
2. To determine the completeness and consistency of existing data within and among these agencies.
3. To determine the capabilities of existing information processing groups.
4. To collect information on current or past studies of this nature.

The survey included the State, county and local jurisdictions in Cameron, Elk, McKean and Poter Counties and Bucks County. The survey also included interviews with other agencies working in the field of educational

information systems. The types of information systems studied include:

-administrative record systems (accounting, budgeting, etc).

-personnel record systems.

-student record systems.

-management and other information systems, and

-external data sources used in planning educational activities (tax records, population data, etc.).

The primary method of study was personnel interviews. The first interview was with Bucks County administrators and data processing personnel. This involved an initial gathering of forms and report formats.

After this data was analyzed an interview was conducted with the Pennsylvania Department of Education personnel which was designed to determine whether the information gathered in Bucks County was typical of other school districts and county offices in the Commonwealth.

The above two sets of interviews provided an excellent guide as to what is actually being done in the information gethering process systems. This guide was then used to direct interviews in the study area to the more important features of the existing information systems. The results of this task may be found in the report, "Survey of Educational Information Systems of Particular Jurisdictions."

Identifying potential activities of the intermediate unit in Pennsylvania and identifying the major planning decision input factors to be incorporated in the EPPB System was the primary mission of Task #8. Representatives of school districts and county offices in the study area met for two intensive two-day workshops to accomplish this task. The results of this task further aided in the development of a program structure for intermediate units and provided further insight into the requirements of

the planning decision making process of the intermediate unit in Pennsylvania. Additional information on the outcome of this task may be obtained from the report, "Study of Decision Input Factors."

A survey of the community characteristics (Task #9) of the school districts in the study area was undertaken. This task provided general environmental background on each school district in the study area prior to field testing the school district and the intermediate unit EPPB Systems. Using available statistical data -- economic, geographic and demographic -- the study area was described and analyzed. The information on the community characteristics is contained in the report, "Survey of Community Characteristics of Participating Jurisdictions."

At the same time the community characteristics survey was undertaken a similar survey of the educational characteristics of the school district was also undertaken (Task #10). The purpose of this survey was to obtain comparable data to describe finances, staffing, physical facilities, and educational characteristics of each school district in the study area. The educational characteristics of each school district may be found in the report, "Survey of Educational System Characteristics of Participating Jurisdictions."

The analysis of results of these tasks provided the basis for identifying the major components of the school district and intermediate unit EPPB Systems (Task #17). The major functional characteristics of each component of the EPPB Systems and the relationships among the components were specified. Information on this task may be found in the report, "Definition of Major PPBS Components." Following the identification and specification of the

major components of the two systems a series of separate developmental tasks were undertaken simultaneously:

1. Development of a method of forecasting the revenue of school districts and intermediate units over a multi-year period (Task #18).
2. Development of a method of forecasting pupil enrollment over a multi-year period (Task #19).
3. Development of a general program structure for school districts and intermediate units in Pennsylvania (Task #20).
4. Development of initial sets of indicators for school districts and intermediate units (Task #21).
5. Description of the proposed school district and intermediate unit EPPB System processes and procedures and their relation to the on-going operations of the local school districts and county offices (Task #22), and
6. Definition of the plan for the development of the analytical procedures necessary to the implementation of the school district and intermediate unit EPPB Systems (Task #23).

The results of these developmental tasks formed the basis for completing the general design of the school district and intermediate unit EPPB Systems to be recommended for development and field testing in the study area.

The general design found in the report entitled, "General Design for an Educational-Planning-Programming-Budgeting System", provided the basis for: (1) the detailed design of the various components of each EPPB System, and (2) the detailed description of the processes for linking the components

of each system together into separate, cohesive EPPB Systems that were compatable. The school district EPPB System at various times during its annual cycle provides information to the intermediate units' EPPB System during its annual cycle. The intermediate unit system could be operated without this input of information from the school districts operating their systems; however, the process of gathering comparable information for the intermediate unit's systems would be made more difficult.

Phase II

Phase II was directed towards accomplishing the following objectives:

(1) Complete the general design report on the school district and intermediate unit EPPB Systems;

(2) Familiarize the project participants with the general design of the EPPB Systems;

(3) Develop the initial manual and automated procedures for operating the school district and intermediate unit EPPB Systems, including enrollment and revenue forecasting procedures, indicators, program and personnel classifications, and analytical techniques;

(4) Select the pilot school districts and county offices (six pilot districts and two county offices were eventually selected).

(5) Train the pilot school district and county office personnel to field test the systems; and

(6) Begin development of a simulated version of the school district EPPB System.

The work started in Phase I on the development of methods of forecasting school district and intermediate unit revenues and pupil population over

a multi-year period was completed during this phase (Tasks #5 and #6). These forecasting procedures were incorporated in the manual procedures for the school district and intermediate units EPPB Systems (Version I, Model 1). Some of these procedures, particularly the enrollment projection methodology, were incorporated in the automated version of each system (Version II, Model 1).

The selection of the initial set of indicators - representing those characteristics of the school districts and intermediate units estimated to be of major importance to superintendents, their staffs, and boards of education - were incorporated in the initial set of procedures for the school district and intermediate unit systems (Task #7). This work was a continuation of the efforts started in Phase I.

The general design report of the EPPB System for school districts and intermediate units, "General Design of an Education-Planning-Programming-Budgeting System" was completed and published during this phase (Task #8).

Task #9 was devoted to selecting six pilot school districts and two county offices to test the EPPB Systems. Three school districts were selected in Bucks County (Central Bucks, Morrisville and Pennsbury) and three school districts in the Cameron, Elk, McKean and Potter Counties area (Cameron County, Port Allegany and Smethport Area) as pilots. Bucks County Office and McKean County Office agreed to act as pilots to test the intermediate unit version of the EPPB System. (Legislation has recently been passed establishing Bucks County and the area embraced by Cameron, Elk, McKean and Potter Counties as intermediate units.)

An initial set of procedures and analytical techniques for each system was developed in Tasks #10 and #11. These procedures and analytical tech-

niques were tested by the technical staff (Task #14 and #15). Both data collected from the pilot school districts and county offices (Task #15). This first test resulted in revising the procedures for each system (Task #16). In the meantime plans were made (Task #13) to run a training program for the personnel of the pilot school districts and county offices to acquaint them with the manual procedures (Version 1, Model 1). This program (Task #14) took place during the months of September and October 1969. During the training sessions, plans were laid for field testing the systems with the pilot school districts and county offices (Task #17). Testing of the EPPB Systems was started in the six pilot school districts and two county offices during the month of November 1969 (Task #18).

The bulk of the effort in Task #19 during this period, originally intended to develop a simulated version of the school district EPPB System (Version III, Model 1), was diverted towards completing the work on automating the major analytical procedures of the school district and intermediate unit EPPB Systems. This latter effort resulted in the development of the automated version of the systems (Version II, Model 1).

Phase III

The primary objectives to be accomplished during Phase III were:

(1) Complete the first field testing of the EPPB Systems with the school districts and county offices;

(2) Complete the revision of the procedures for the manual version (Version 1, Model 2) and the documentation of the automated version (Version II, Model 1) for the school district and intermediate unit EPPB Systems;

(3) Develop and conduct an intensive training activity open to all participants in the study and representatives from the Pennsylvania Department of Education and other school districts and county offices in the Commonwealth; and

(4) Continue to develop the simulated version of the school district version of the EPPB System (Version III, Model 1).

The field testing of the EPPB System with the six school districts and two county offices (Task #34) was completed during this phase. During the time this field testing was underway, the procedures for the manual version (Version I, Model 1) for school district and intermediate unit EPPB Systems were undergoing continual revision. These revisions resulted in the development of a modified version designated, Version I, Model 2. These procedures were then incorporated into two separate sets of manuals -- one set of two manuals for the school districts and one set of two manuals for the intermediate units. The basic analytical procedures of both systems were automated using a batch processing approach. This automation was undergoing continual revision (Task #35) during this same period. The major portion of the effort that normally would have been devoted to the continued development of the simluated version of the school district system was diverted to this task. The automated version of each system was thoroughly documented and incorporated into two separate manuals -- one manual for the school districts and one manual for the intermediate units.

An intensive two-day workshop was planned and conducted (Task #36) during March 1969 in Atlantic City. This workshop was designed to review all of the changes made in the EPPB Systems with key study participants and representatives of the Pennsylvania Department of Education. Particular

emphasis during this workshop was given to simulated cycle of the manual version of the school district system. The results of this workshop provided the foundation for developing a more intensive four and one-half day workshop program which was scheduled for presentation in August 1969.

Phase IV

Phase IV was designed to accomplish the following objectives:

(1) Complete the field testing, modification and reproduction of the EPPB Systems manual and automated versions;

(2) Complete the development of the simulated version of the school district system; and

(3) Complete the development and presentation of an intensive four and one-half day workshop on the EPPB Systems.

The field testing of each system was completed by April 1969 (Task #1.0 and #2.0). The procedures for the manual version for each system were completely modified and reproduced by the end of July 1969 (Tasks #1.1, 1.2). The following manuals were produced for each system:

-"EPPB System Procedures Manual for School Districts, Version I, Model 2, Volumes I and II", and

-"EPPB System Intermediate Units, Version I, Model 2, Volumes I and II".

Documentation of the automated version of each system was completed and reproduced in the following manuals (Tasks #2.1 and #2.2):

-"EPPB System Documentation Manual for School Districts, Version II, Model 1", and

-"EPPB System Documentation Manual for Intermediate Units, Version II, Model 1".

The work on Version III, Model 1 of the System continued during this period (Task #3.0). This simulated version was used at the workshop in August 1969 (Tasks #8.0 and #8.1).

Phase V

The technical work in this phase, the final phase before the termination of the study, was designed to accomplish the following objectives:

(1) Complete the final field testing of the EPPB Systems;

(2) Complete the development, testing and documentation of the simulated version of the school district EPPB System (Version III, Model 1);

(3) Complete the reprogramming of the school district EPPB System (Version II, Model 1) and the Pupil Population Forecaster in order to permit its use on the Bucks County computer system; and

(4) Complete the development and reproduction of the technical report and addendum reports.

The second field testing of the EPPB Systems were completed by April 1970 (Task # 1.0). The work on Version III, Model 1 was completed by June 1970 (Task #7.0). The reprogramming of the programs for the school district EPPB System and Pupil Population Forecaster for operation on the Bucks County computer system was completed in August 1970. Extensive reprogramming would have been required to convert Version II, Model 1 of the intermediate unit EPPB System in order to make it run on the Bucks County computer system. Because of funding constraints this effort was abandoned. The technical staff recommended that the county offices in the study area either run the intermediate unit system at the University of Pennsylvania Computer Center

(both Version II, Model 1's were designed to run on this computer system) or a more conveniently located computer system of comparable size. The final technical report and accompanying addendum reports were completed in September 1970.

Summary of the Major Outputs

The technical work effort over the life of the project produced a large number of technical documents, manuals, program decks, and training materials. The technical documents produced during the first two phases are cited in the discussion of each phase. The procedures and documentation manuals are cited in the discussion of the technical work performed during Phase IV. Program decks for the school district and intermediate unit EPPB Systems were also produced and, as a matter of fact, have been requested in conjunction with the manuals by a number of school districts and intermediate units from outside the study area. The training materials consisted of a general study manual and print-outs and work sheets designed to support three study exercises. The technical report of which this section is a part will include in Appendix B the documentation of the simulated version of the school district EPPB System (Version III, Model 1). Finally, the following technical addenda have been prepared to accompany the technical report:

- "Working Paper on the Problems of Generating Y-1 Budget",
- "The Delphi Technique Applied to Predicting Effectiveness of Educational Projects",
- "Working Paper on the Procedures for Projecting Costs of Projects to Update Enrollments and Inflation Changes for School Districts and

Intermediate Units",

-"Documentation of the Pupil Population Forecasting Procedure",

-"Revised Appendix C of the EPPBS Procedures Manual for School Districts (Version I, Model 2, Volume II" (expanded school district information requirements) and

-"Revised Appendix C of the EPPBS Procedures Manual for Intermediate Units, Version II, Model 2, Volume II" (expanded intermediate unit information requirements).

CHAPTER IV

REGIONAL EDUCATIONAL DATA PROCESSING INFORMATION CENTER (REDPIC) ACTIVITIES

1967-68 Activities

The activities of the initial phase of REDPIC development were devoted to evaluation, study, administrative planning, and acquisition of the hardware and software necessary to begin pilot operations for the 1968-69 school year.

In the early stages of development the staff devoted its energy to the study and evaluation of existing systems for the purpose of discovering or developing a model. This study culminated in an on-site evaluation of the regional data processing centers in California and the tentative decision to adopt, with adaptation, the California System.

In early 1968 the administrative planning focused on establishing computer specifications, conducting conferences with vendors, and accepting and evaluating bids for hardware. Concurrent with these activities was the examination and evaluation of possible sites. Once the contracts were awarded and the site selected administrative effort time was devoted to supervision of system installation, program conversion, and execution of the plans for facility acquisition.

While the administrative planning was underway, preliminary discussions with pilot local school districts from Bucks, Cameron, Elk, McKean, Montgomery, and Potter Counties were begun. These discussions were followed up with further negotiations which ultimately led to agreements with 4 school districts to act as pilots.

Also early in 1968, staff hiring got underway and once the staff was hired they immediately began orientation and training activities. With the hiring and training of the staff, the acquisition of the hardware, and the agreement with pilot school districts REDPIC was prepared to undergo pilot operations during the 1968-69 school year.

1968-69 Activities

School year 1968-69 saw the initiation of the Bucks County Regional Educational Data Processing Information Center (REDPIC). Pupil Personnel master files were built for Morrisville, Bristol Boro, Smethport (McKean County) and Cameron County. These four districts were the original pilot districts who contributed at the rate of $1.00 per student. During this school year various subsystems of the Pupil Personnel System (Scheduling, Attendance, and Mark Reporting) were tested through the cooperation of the pilot school districts. These experiences were valuable as indicators of minor system changes. Honeywell, Inc. provided systems support on site until approximately October 15, 1968 and to a limited extent until March 15, 1969.

The Honeywell H-200 computer along with peripheral equipment was installed on the site prepared by the County Commissioners on the 7th Floor of the Bucks County Administration Building. The computer installation became operational January 20, 1969.

During the Spring of 1969, nine (9) districts expressed their intention to participate in the services of REDPIC. Through cooperation of the Bucks County Commissioners, machines and personnel of the County Data Processing Department were made available to Bucks County schools in providing services to participating school districts. In return Bucks County schools provided

a 25% educational discount from the monthly computer lease costs. REDPIC paid $17,000 to the County Commissioners. This represents budgeted data processing monies from the IUPS. Participating school districts agreed to pay a nominal sum of fifty cents per student to cover costs of forms. REDPIC will supply to Bensalem, Bristol Boro, Central Bucks, Council Rock, Morrisville, New Hope-Solebury and Palisades, for Pupil Personnel services (Scheduling, Attendance, Mark Reporting, Test Scoring and Reporting and Guidance Reporting) for school year 1969-70. Smethport (McKean County) and Emporium (Cameron County) contracted at the rate of $2.50 per secondary student and $1.25 per elementary student for the same services. The total number of students being serviced is approximately 24,000.

1969-70 Activities

REDPIC provided scheduling services to seventeen (17) schools and produced class lists, student schedules, teacher schedules, locator cards, etc. for school opening, September 3rd and 4th. To date, the Attendance subsystem has gone through two cycles and the Mark Reporting subsystem through at least one cycle. Testing in the local districts has begun. REDPIC has furnished answer cards for various tests. Tests are being scored and analysis reports prepared. Master files are continually being updated and made more accurate. As schools experience progresses so does the accuracy and efficiency of the system. Detailed reports on individual subsystems are attached.

The Central Bucks School District is piloting an Accounts Payable system which has been extended to include encumberance accounting and analyses of cost by budget account number. To date, five monthly cycles have been

processed. Modifications have been made to the system, adapting it to the requirements of local school districts and state reporting. It is anticipated that the service will be made available to interested school districts.

The Palisades School District is piloting a Bus Scheduling subsystem. Work is being done by the Burroughs Corporation. The completed system will be processed on a Burroughs B3500 Computer at Radnor, Pennsylvania. Information on the system will be made available to interested school districts when reports, etc. produced by the system are finalized.

Computer math classes of Central Bucks are being trained in the use of FORTRAN language for purposes of problem solving. Students write the programs, punch instructions and data into cards and have them processed on an average of once a week. This process is under the direction of the class instructor. It is hopeful that this type of instructional participation will increase and spread to other school districts.

Activities and Status of the Various Subsystems

Student Master Files

Construction of student master files has been completed for some time. Inaccurate and/or incomplete file records from the construction era have caused problems for REPIC and various school personnel. In rectifying this situation, some schools made immediate changes to alleviate this situation. However, some schools did not make necessary changes to this basic information. The result was that they had to go back and correct report material along with their basic information. This involved a great deal of extra concentrated work. Data now being received from participating schools is indicating that the necessary "growing pains" period has passed. Now that schools have seen various output reports, the value of the master file has

became ever apparent.

Attendance Accounting

Attendance Accounting and the procedures involved in creating a smooth-flowing system has involved a great deal of communication between schools and REDPIC. Many problems arose from a lack of coordination within the school building itself. For example: SDT withdrawal date coordinated with the attendance officer's responsibility in filling out 20-day attendance cards. Attendance Accounting meetings within school districts have been well attended. However, some people who were given the responsibility for attendance accounting for a school were not informed of the attendance meetings. The result was that they received REDPIC procedure instructions second hand. We have just completed our second 20-day attendance period and the results have impressed school administrators as well as guidance counselors. The guidance staffs have found the "Irregular Attendance Analysis" to be an extremely valuable guidance tool.

Scheduling

REDPIC scheduled approximately 17,000 students in seventeen (17) different high schools for this school year. Class lists, student schedules and various other reports were made available to every school prior to opening of school year 1969-70.

Timing of the flow of data from the schools was not ideal in some instances. The two major factors affecting this were: (1) three of the nine districts were building new senior high school facilities. Because of this, much of the principals' time had to be diverted from the scheduling effort. Also, there were many problems with individual students as to which school they would attend for 69-70. (2) computer scheduling was new to most of the principals and a great deal of learning was necessary to provide us

with the required data.

Hindsight comments would have to be that results were very good with most schools scheduling above 98% of their students. Next year it should be smoother because of an awareness of what is available and particularly because everyone will have an opportunity to start the process earlier.

Mark Reporting

There are many aspects of the mark reporting subsystem, the focal point of which is the student report card. It is difficult to comment on the system except to say that for the first marking period each school has received its report cards, mark analysis, alphabetical and ranked grade point average listings and the guidance oriented report listing students who received D, F, or Incomplete grades. There have been good reports from principals, guidance personnel and teachers so far. Like scheduling, the mark reporting subsystem requires some getting used to. If given time to fully utilize the reports provided, which include for final grades the guidance report and/or grade labels for cumulative folders, this part of the pupil services will be invaluable.

Testing

REDPIC hopes to be responsible to local district needs in the area of testing. The day when test scores were filed in the permanent folders and forgotten is past. A large amount of time and money is being spent in our current testing programs and it is now time to reap the benefits from our investment. This goal was one of the original reasons for adopting the California System.

The wholesale lifting of the California Testing subsystem to Bucks County has brought with it some pleasant surprises and some disappointments. First, our districts are taking advantage of the ease in creating local district norms. No major test publisher supplies this with its basic charge. Now districts can begin to look at their students from the very meaningful perspective of the local district in addition to comparing itself to the national norms. Secondly, there is great potential for using the centrally stored files of student data for conducting research at the local level. One of the strong features of the California System is the easy retrieval of testing information from the files. Finally, REDPIC can supply consultant help for the design and conducting of research on the local level.

The most obvious limitations of the service to date has been the tests offered. Two tests which, from their popularity here in Bucks County, should be offered are the Stanford Achievement Test: High School Battery and the Gates-McGintie Reading Test.

Several extensions of testing services are currently under consideration. First is the possibility of using optical scanning for test scoring. This would probably enable REDPIC to offer a wider range of tests.

Several districts have inquired about the possibility of creating regional or Bucks County norms. Technically, REDPIC is capable of doing this, but several obvious problems must be solved. To create regional norms for a given test it would first be necessary for several representative districts throughout the county to use the same test. Secondly, the districts would have to consent to the use of the data from their district to create the

data bank for norms.

Another possible extension of services would be the creation of a centralized test booklet loan service. A wider range of tests and more frequent updating of tests would result. Scheduling of testing would of course have to be carefully coordinated with local districts.

Through continued cooperation, local districts will begin to get a return on their investment in testing.

REDPIC and Statewide Education Data Processing

On March 4, 1969, a group of administrative personnel from local educational agencies met in Harrisburg to explore the many problems which plague school administrators. For the most part, persons invited had ample background in computerization of school administrative tasks.

As a result of discussions, it was evident that an organization of school districts having EDP interests should be formed. The organization consists of two committees: one, to recommend establishment of statewide educational data processing goals; the other, to recommend a series of statewide standards. The names of the committees are: The Statewide Goals Committee and the ADP Users' Committee. Mr. Robert Rossheim, Philadelphia schools, was elected chairman of the Statewide Goals Committee. Mr. Emmett W. Bock, Coordinator of EDP, Bucks County Schools is a member of this committee. Mr. David Rhone, Pennsbury schools, was elected chairman of the ADP Users' Committee. Dr. Albert Neiman and Mr. Melvin Mack, Assistant Superintendents, Bucks County Schools, are members of this committee. Both committees have met a number of times and are engaged in studying and planning various alternatives which are available to the Department of Education

in its approach to the design of a statewide educational information system.

REDPIC is currently being considered as one of the initial five regional data processing centers in a pilot state-wide network of educational data processing service agencies. If REDPIC becomes one of the regional centers in the statewide networks the staff will be in a position to provide the other centers technical and professional assistance based on experience with an operating pupil personnel system.

CHAPTER V

PROJECT EFFECTS, OUTCOMES, AND EVALUATION

Effect on Participating Educational Agencies

The impact of this study on the participating educational agencies that occured during Phases II and III continued during Phases IV and V. Training of the personnel in the six local school districts and two county offices or intermediate units was quite intensive. The concentration of efforts on the part of the study staff and the participating agencies continued to have an observable impact on the management of these agencies during the final year of the study.

The school districts in Bucks, Cameron, Elk, McKean and Potter Counties were in the process of developing long range development plans (ten year) which had to be completed by July 1, 1969 and are required by the Department of Education to be up-dated every two years. This information provided "input" to the EPPB System. The Intermediate Unit Planning team has provided assistance to at least seventeen local school districts in the five participating counties in the development of their long range plans.

An outgrowth of the work conducted during the study is that the five participating county offices and a number of participating school districts now recognize the need for developing an integrated management information system. A number of the interested county offices and districts have joined to form an electronic data processing (EDP) center. This center has been developed in cooperation with the Bucks County Commissioners and now utilizes the Commissioners existing EDP facilities and staff. A large computer has been leased for the center. A separate systems and programming staff has

been formed to service the county offices and schools. They have developed a number of files which have been utilized by the cooperating county offices and local school districts during the course of the study.

Effect on Cooperating Educational Agencies and Institutions

During Phases IV and V the EPPB System for both manual and automated versions were readily available for distribution and some dissemination of the results of the study was conducted.

The cooperative relationship established among the Government Studies Center of the Fels Institute, Graduate School of Education and the Management Science Center of the Wharton School of Finance and Commerce has provided an opportunity to attack an educational problem through an interdisciplinary approach. Because of this approach, an innovative solution has been found to the perplexing problems of developing a working procedure for allocating resources at the county office or intermediate unit level. This close association of these three major graduate schools will undoubtedly have a profound and lasting effect on the attitudes the staffs of these schools have toward one another and their recognition that educational problems can be solved through an interdisciplinary approach.

Dissemination

The dissemination of information during the study has been dictated by the ebb and flow of the program. An information brochure, for school directors has been produced for wide distribution. It describes the emerging role of the intermediate unit in Pennsylvania, the problems to be solved by

the study, the goals of the study, the work program and the time schedule.

In addition to the information brochure, a number of working papers have been distributed among the participants. Eleven detailed working papers were produced during Phase I.

Minutes and other relevant information growing out of various committee meetings were distributed to the members of the various committees. Members of the Steering Committee and County Superintendents of Schools Committee have been provided with loose leaf binders for holding minutes of meetings and all other relevant documentation.

An average of five unsolicited responses per month for information on the study have been received since August, 1967. A two-hour speech on the study was delivered to the Metropolitan County Superintendents Committee in the Dennis Hotel, Atlantic City, on February 17, 1968. This group meets every year at the AASA Convention, to discuss problems relevant to the operation of counties and intermediate units adjacent to large metropolitan areas.

A panel discussion, chaired by Dean William B. Castetter, Graduate School of Education, University of Pennsylvania, delt with the Intermediate Unit Planning Study and its impact on the future development of eduational administration. The panel discussion took place at the 1968 AASA Convention in Convention Hall on February 20, 1968. In addition to Dean Castetter, the following members of the study staff also participated on the panel: C.E. Brewin, Jr., Manager, Educational Systems Division, Government Studies Center, Fels Institute of Local and State Government; John K. Parker, Manager, Systems Division, Government Studies Center, Fels Institute of Local and State Government; Roger L. Sisson, Associate Professor of Statistics and Operations Research, Wharton School of Finance and Commerce.

Members of the Study Staff also participated in conferences at the 1969 meetings of the American Association of School Administrators Annual Conventions.

Three reports on the progress of the study were delivered during the first phase of activities. The first report was given in Bucks County on November 10, 1967, to a combined group of county office personnel, county board members and local school administrators of Bucks, Cameron, Elk, McKean, Montgomery and Potter Counties. The second meeting was held on March 14 in Cameron County. The participants included county office staff, county board members and local school district administrators of Cameron, Elk, McKean and Potter counties. The third meeting was held on March 15, in Bucks County and also involved county office staff, county board members and local school district administrators of Bucks and Montgomery Counties.

A seminar was held in May for dissemination of Phase I study results. Approximately fifty administrators from Pennsylvania school districts, county offices, Department of Public Instruction and a few from Delaware and New Jersey were in attendance.

Dr. C. E. Brewin, a member of the study staff, delivered a speech on the projects development at an American Management Association seminar held near the end of March, 1969.

In addition an article was prepared and published in the American Management Association Journal.

The Director of the project has continued his dissemination activities with a paper presented before a seminar sponsored by the Lincoln County Board of Education, Ontario, Canada, and an article published in the Journal of the Pennsylvania School Boards Association.

Extension of the Study

The intermediate unit form of organization has become a reality in Pennsylvania. Since the project has been funded for a fourth year the participating districts should continue development of the EPPB System in cooperation with the Pennsylvania Department of Education. It is assumed that other interested county offices and local school districts will attempt to implement the EPPB System developed in the study.

The EPPB System developed in this study provides an educational planning-programming-budgeting procedures for local school districts and county offices or intermediate units, but has not developed procedures for use at the state level. The Department of Education has adopted a system which is not presently compatible with that developed for this study. The purpose of the extension grant is to make the two systems compatible. Long range improvement of the EPPB System will depend not only on the support of local school districts and county offices or intermediate units, but also on technical support provided by the Department of Education and other public and private agencies.

Outputs of the Study

The study has been designed to produce a series of documents, reports, and a training program. The documents and reports coupled with the training program provide a comprehensive picture of the manual and semi-automated versions of the Planning-Programming-Budgeting System. Each version contains an intermediate unit and school district EPPB subsystem. The reports contain detailed technical and general discussions concerning the development activities

of the study and embrace the recommendations of the study staff for further research and development. The recommendations for further development are related to Planning-Programming-Budgeting Systems for intermediate units or county offices, school districts and, where appropriate, the Pennsylvania Department of Education.

The following are the main outputs:

1. A Procedures Manual which includes directions anf forms has been produced for the manual version - PPBS - Version I, Model 2. This manual was developed from the experience gained through the field testing of the first Procedures Manual - PPBS - Version I, Model 1. The Model 2 Procedure Manual has been available in limited quantity since late June 1969.

2. A Procedures Manual has been produced on the semi-automated batch-process version - PPBS - Version II, Model 1. This version has been tested with the pilot county offices and school districts. Copies of this manual have been available in limited quantities since late June.

3. Where possible, computer programs have been made available for the semi-automated batch-process versions.

4. A technical report has been prepared on the results of the development and testing of the semi-automated on-line version - PPBS - Version III, Model 1. Computer programs are also available for this version.

5. Technical and general reports have been produced and in most cases, are available in limited quantity. Additional technical and general reports have been produced in Phases IV and V and will also be available in limited quantity.

6. Finally, a number of articles for journals and a detailed final technical report has been prepared during the latter part of the study.

7. Materials prepared for the training sessions in Phases IV and V are available in limited quantity. These materials have been utilized in the EPPBS Training Seminar and the training sessions with the pilots.

Evaluation

Evaluation for the Intermediate Unit Planning Study consisted of three elements:

1. Management control evaluation, the purpose of which was to provide information for making decisions.
2. External evaluation, a process used to provide periodic feedback for continuous refinement of plans and procedures.
3. Field evaluation, a produce evaluation needed for determining the effectiveness of the project.

Management Control

The management control evaluation was built into the work program. It was an inherent part of the procedure for accomplishing the work objectives, utilizing the resources and meeting program goals.

The detailed work program for each phase of the project has undergone continued monitoring, revision and detailed development as the project progressed. This procedure has been used to assess the human and material resources, determine available strategies for meeting program goals and identify procedural designs delineated in terms of resource, time and budget requirements.

Each task of the work program was listed. A description of the task was given in the form of a narrative statement including the scope and limitations, objectives, assignment of responsibility and completion date.

The evaluation of the implementation task, based upon the progress of each of the pilot districts and counties was concerned with the satisfaction of objectives set forth in the task description. An assessment of the weak-

nesses and strengths in the method of using the manual and its relationship to the overall project goals was also an integral part of the appraisal.

The evaluation attempted to focus attention on theoretically important variates, and yet remain alert to any unanticipated, but significant events, in order to provide project decision-makers information needed for revising and automating the procedures manual.

External Evaluation

The external evaluation concerned itself with a thorough analysis of the results based on feedback from the pilot participants.

The objective of the external or process evaluation was to detect or predict defects in the operation and use of the procedures manual in order to provide the necessary information to revise and prepare it for automation.

Field Evaluation

The third element, field evaluation, was primarily concerned with how effectively the management system, developed during the study, functioned in real world settings. This evaluation concerned itself with such items as: (1) what management techniques or methods exist in the real world that could improve the management system developed in the study; (2) whether the design of the EPPB System can be utilized and implemented by the Intermediate Units in Pennsylvania; and (3) an examination of the appropriateness and relevancy of the system presently in actual operation with the EPPB pilots and the opinion and decisions of the pilot personnel to continue to test the system over a period of time in order to determine its ultimate use in the public school systems. Reports from the personnel involved in the pilot implementation are included in Appendix "C".

NARRATIVE REPORT: IUPS FISCAL YEAR 1970-71

The activities for fiscal year 1970-71 were supported by a continuation grant. The purpose of the project was to determine the feasibility of modifying and to modify, if possible, the existing PPBS to make it compatible with the PPB System currently in operation at the Pennsylvania Department of Education. The project was further charged with the responsibility of developing an internal accounting system to support the modified PPBS.

A contract was given to Mr. David Rhone, Assistant Superintendent for Business Affairs, Pennsbury Public Schools, Fallsington Building, Fallsington, Pennsylvania, to develop an accounting system. Throughout the year, progress of the accounting system development was monitored by the project staff, and representatives of the Pennsylvania Department of Education and Governors Office of Administration. Two progress reports were submitted by Mr. Rhone, one in November and one in March; these were followed with a final report submitted in June 1971. Each of the progress reports were followed by meetings with the state officials to get their reactions and suggestions.

The modification of the basic PPBS was the responsibility of the regular project staff. Because the study was exploratory (there were no assurances that the systems could be made compatable), no specific set of detailed procedures or plans were outlined before the study was initiated. However, a general outline was adopted in which the project was divided into four phases, (1) a planning or study phase, (2) a phase in which the changes would be made (3) a testing phase, and (4) a reporting or documentation phase. There was no way to determine before hand how much time each phase would take; but, it seemed apparent that they would have to be undertaken in order listed above.

n actual practice, the termination of one phase did not coinside with the beginning of the next.

Phase I

The study and planning phase was devoted to three major activities; (1) study of the current PPBS to determine limitations, possible systems of changes, and probable expenses in terms of manpower, time and money, (2) study of related literature to consider possible improvements of the current system which could be effectively incorporated in the modified system and (3) revision of the existing semi-automated version of the PPBS to work on a smaller computer facility than currently in use. Study and planning was a continuing activity throughout the entire project, but it was the major activity throughout the summer and early fall of 1970.

During this period the most noticeable, though not necessarily the most important, activities were centered on revision and testing of the computer program. At first, attempts were made to scale down the program to work on the facility of the Regional Educational Data Processing and Information Center (REDPIC) of the Bucks County Schools; it became apparent, (at this time and for the purposes of the project) that the expenses in both time and money for the conversion to the local computer were not justified.

When the need for a larger computer facility was recognized, REDPIC approached the personnel at the computer facility at Lehigh University, Bethlehem, Pennsylvania and arranged to use their facilities and services. Through cooperation between REDPIC and Lehigh University the computer program was scaled down and adapted to Lehigh's facility. To test this conversion, data were collected from Area Nine and used as input; all tests indicated

that the programs were working correctly. The collection of the data from Area Nine also served the second purpose of maintaining liaison for possible future piloting.

The activities above had the practical result of producing a computer program which works on a facility readily accessable to the staff. Also, these revised programs should be adaptable to the computer facilities which are projected to be available to most school districts in Pennsylvania. More important to the overall success of the project, these activities provided the project staff with insights into the intricacies of the PPBS and its computer program. These insights coupled with the understanding and knowledge gained through study and discussion prepared the staff to undertake phase two, the actual changing of the system.

Phase II

Changing of the system began with meetings and discussions with personnel from the Department of Education and Governors Office of Administration to learn about the state structure and determine the needs and desires of the state. Although preliminary planning meetings were held in the summer, the meetings which directly affected changes in the system did not get underway until early fall when the state program structure and other publications were made available to the project staff.

The project staff studied and discussed the program structure of the state and its relationship to the local school district PPBS. At the same time a representative of the Governors Office of Administration was independently studying these relationships. A meeting was arranged with the state official in November. As a direct result of this meeting with the representative of the Office of Administration the names of the twenty three programs

in the original PPBS were changed and reordered to coinside with the state structure.

After the programs were accepted by the staff, defining and revising them became the major task. When the programs were defined, it became necessary to rename and define the manpower types associated with each program and make appropriate adjustments in the semi-automated version. When the preliminary structure and definitions were compiled they were forwarded to the state personnel for their review and comments. This was followed with a meeting in Harrisburg in early December when suggestions for revisions and changes were made.

During this meeting the question was raised about piloting the system; it was agreed that a simulation study should be undertaken before attempts were made for active pilotíng. A tentative date to begin a simulation was set for early January 1971.

The remainder of December was devoted to making the suggested changes in the program structure and definitions. Early in January it became obvious that the changes in the program structure necessitated changes in the planning component of the PPBS. The first part of the winter was devoted to preliminary modificatinn of the planning concepts. Although the planning concepts were not fully developed, testing of the modified system got underway in late January with a simulation study.

Phase III

The simulation and resultant analysis consituted the projects third phase, testing the modified PPBS. This phase began with the necessary changes in the semi-automated version. The actual simulation consisted of

five steps; (1) choosing a source of data, (2) collection of the data, (3) refinement and preparation of data for computerized version, (4) processing of the data, and (5) analysis of the results.

To find a data source, the characteristics of the various schools who piloted the original PPBS were studied. A medium sized district was chosen to be the model for the simulated district. The data was collected on the district for the 1968-69 school year. The most difficult step of the simulation was re-working the data to fit into the new program structures.

To test all the programs it was necessary to create fictional allocations, but care was taken to make the allocations as realistic as possible. Although the resultant simulated district was fictional it was realistic enough to provide a reasonable test for the modified PPBS.

This data was prepared for computer data processing, then processed at the computer facility at Lehigh University. After several computer runs with necessary system changes, the results were forwarded to the personnel of the Department of Education and Office of Administration.

These results were analyzed independently by the project staff and the state personnel. The staff met with the state personnel early in the spring to discuss the results of the simulation. After the results were presented to the state officials it was agreed that any pilot activities undertaken this late in the year would yield no more useable information than was available from the simulation. At this meeting it was decided that the remaining few months of the project would be devoted to the final phase, reporting the results including the preparation of the needed documentation.

Phase IV

The primary objective of this last phase was to produce a manual for the PPBS which could be used for piloting, field testing, and/or implementation. The first step of this phase was a review of the accomplishments and changes for the purpose of clarifying the concepts and deciding what parts of the original system to include or delete.

Actual physical preparation of a new manual began with review and revision of the previous manuals. Because PPBS is complex and difficult to follow, one of the intents of the revision was to simplify those parts of the original manual which would be retained. After many condensations, revisions, and deletions only the absolutely essentials of the old manuals were retained.

New sections were written to encompass the changes in the over-all system. These sections were added to the old revised manual to make up the new manual. This material was organized into a new format and compiled into the final manual. Admittedly, the manual is not as simple as desirable, but time did not permit further revision and simplification.

The last weeks of the project were devoted to the administrative details of completing the reproduction of the manuals and reports.

APPENDIX A

A REPORT TO THE INTERMEDIATE PLANNING STUDY ON THE FINDINGS OF A VALIDATION OF TEN INDICATORS OF SCHOOL EFFECTIVENESS

As a Doctoral Dissertation for Lehigh University a Research Intern at the Research and Planning Division of the Bucks County Public Schools investigated the validity of ten indicators of school effectiveness used in the Planning-Programming-Budgeting System developed by the Intermediate Unit Planning Study.

The following three questions were asked:

1. Do the indicators have some degree of formal validity?
2. Are the indicators as a group, significantly related to quality education as measured by the Pennsylvania Bureau of Educational Quality Assessment?
3. If the indicators are related to quality in education as measured, can they be adequately expressed by fewer than ten factors?

The sample of secondary schools used by the Pennsylvania Bureau of Educational Quality Assessment in Phase II of their study was also used in this study. Indicator data were collected for 77 schools. Data were not available for all 77 schools on the quality measures reducing the number of schools with a complete set of data to 72.

Data were collected from the files of the Pennsylvania Department of Education on the following ten "indicators":

1. Excess Enrollment (EE) - a measure of average class size
2. Classroom Teachers per 1,000 Weighted Pupils (T/P) - a measure of teacher pupil ratio
3. Total Course Offerings (TCO); substituted for Mean Cumulative Course Offerings because all the data were not available - a measure of the breadth of the curriculum
4. Professional Instructional Specialist per 1,000 Weighted Pupils (SP/P) - a measure of non-instructional professional services
5. Total Dollar Expenditure for Curriculum Materials, Supplies and Library Books per Weighted Pupil, ($CURR), - a measure of dollars spent on non-essential materials.

6. Net Total Expenditures Per Weighted Pupil ($TOTAL), - a measure of total expenditures per pupil.

7. Professional Staff Turnover Rate in Percent Per Year (S-TURN), - a measure of staff stability.

8. Percent Professional Staff with Masters Degree or More (MA) - a measure of educational level of the staff.

9. Percent Graduating Class Attending Post High School Education (PHSE) - a measure of the number of pupils continuing education.

10. Dropout Percent for Grades 10, 11, and 12 (DROP) - a measure of the holding power of the schools.

Data for the goals of education were collected by the Pennsylvania Bureau of Educational Quality Assessment using their assessment package designed to measure the following ten goals of education:

1. Self Understanding (SELF) - one measure, to assess how a pupil sees himself and how much control of his environment he feels he has.

2. Understanding Others (OTHERS) - one measure, to assess how well the pupil interacts with all types of people.

3. Basic Skills (SKILLS) - one measure, to assess the pupil's achievement in math, science, social science, etc.

4. Interest in School and Learning (INTEREST) - one measure, to assess the pupil's in and attitude toward the educational process.

5. Good Citizenship (CITIZ) - one measure, to assess the pupil's tendency to assume the responsibilities of good citizenship in our society.

6. Good Health Habits (HEALTH) - one measure, to assess the pupil's understanding of the practices necessary to maintain sound physical and mental health.

7. Creativity (CREAT) - two measures, one to measure the pupils creative output; (CREAT-O), one to measure the pupils creative potential (CREAT-P).

8. Vocational Development (VOC) - one measure, to assess the pupil's involvement in the vocational choice process.

9. Understanding Human Accomplishments (H-ACC) - one measure, to assess the pupil's knowledge of human accomplishments and their importance to mankind.

10. Preparation for a Changing World, (CHANGE) - one measure, to assess the pupil's openess to new experience.

The Pennsylvania Bureau of Educational Quality Assessment considers the quality measures to be reasonably valid and reliable (Campbell, 1970). Because the mean pupil achievements on the measures were used in this study, and means are generally more reliable than individual scores, there is reason to believe the data meets satisfactory standards of reliability. The Bureau has conducted validity studies and have found some measure of validity operating in all their instruments.

DESIGN

The basic approach to the first question was to review the literature with the intent of discovering the variables used in previous studies as well as report some of the findings and opinions of previous investigators. The literature findings coupled with the logic of the indicator development provided a basis for judging the formal validity of the ten indicators.

The second question was approached by fitting the indicators and quality measures into an input-process-output model, then applying canonical correlation analysis using the ten indicators as the predictor variables and the eleven measures of the ten Pennsylvania Goals of Education as the criteria variables. In the model, the pupil achievement of the ten goals of education were classified as the outputs; the ten indicators were classified as inputs.

The third question was asked because it is assumed that indicator selection will be a continuous process (Fels, 1968, p. 112), and the identification of the independent factors in the array of indicator variables would aid this continuing selection. Principal component factor analysis was the technique chosen to answer this question.

As part of the overall analysis the product moment correlation matrix for all the variables was calculated. This large 21 x 21 matrix was broken down into three smaller matrices, a matrix of indicator intercorrelations (Table I), a matrix of quality measure intercorrelations (Table II), and a matrix of the correlations of the indicators with the quality measures (Table III). The coefficients in these matrices show the magnitude and direction of the relationships among the individual variables; the canonical correlation shows the magnitude of relationship between the sets of variables; and the factor analysis reduced the original correlated variables to a smaller number of uncorrelated variables (factors).

The findings of these analyses are discussed in the following order:

1. The intercorrelations of the ten indicators calculated as part of the factor analysis using data from 77 schools.
2. The correlations of the ten indicators with the eleven quality measures calculated as part of the canonical analysis using data from 72 schools.
3. The results of the canonical correlation analysis of the set of ten indicators with the set of eleven quality measures using data from 72 schools.
4. The results of the factor analysis of the ten indicators using data from 77 schools.

FINDINGS

The Indicator Intercorrelations

For the sample size, (N = 77) coefficients greater than .23 are significant at the .05 level (Fisher and Yates, 1963, p. 63). The first thing of interest to be noted from the matrix is the relatively small coefficients throughout the table, which suggests that the variables are measuring different entities and the developers did a good job of choosing indicators which

are comparatively independent of each other. The correlations for the individual indicators are discussed below and the correlation matrix is presented in Table I.

Indicator I, Excess Enrollment, was correlated with two other indicators with coefficients greater than .40; Teachers Per 1,000 Weighted Pupils, and Net Total Expenditures Per Weighted Pupils. Specialists per 1,000 Weighted Pupils is the only indicator correlated with Excess Enrollment with a coefficient between .40 and .30. Indicator I was less highly correlated with Total Course Offerings and Percent Graduating Class Attending Post High School Education. It was not significantly correlated with the other indicators.

Indicator II, Teachers Per 1,000 Weighted Pupils, was correlated with two indicators with coefficients greater than .40; Net Total Expenditures per 1,000 Weighted Pupils, and Excess Enrollment. Specialists per 1,000 Weighted Pupils was the only indicator correlated with Indicator II with a coefficient between .40 and .30. Indicator II is less highly correlated with Staff with Masters Degree and Dropouts.

Indicator III, Total Course Offerings, was significantly correlated with only three other indicators, Excess Enrollment, Percent Graduating Class Attending Post High School Education, and Staff with Masters Degree. All of the coefficients are less than .30.

Indicator IV, Specialists per 1,000 Weighted Pupils, was significantly correlated with four others. Net Total Expenditures was the only correlate with a coefficient greater than .40. Percent of Staff with Masters Degree, Teachers Per 1,000 Weighted Pupils, and Excess Enrollment were the indicators which correlated with coefficients between .40 and .30.

TABLE I

INTERCORRELATIONS OF THE IUPS INDICATORS

	I	II	III	IV	V	VI	VII	VIII	IX	X
MEANS	.655	41.99	121.8	2.96	6.69	710.0	13.81	23.98	50.27	2.17
S.D.	3.93	4.22	28.72	1.01	4.52	141.7	4.39	9.40	15.00	1.83
EE I	1.00									
T/P II	- .561*	1.00								
TCO III	.297*	- .091	1.00							
SP/P IV	-.307*	.357*	- .086	1.00						
$-CURR V	-.048	.114	- .080	.084	1.00					
$-TOTAL VI	-.481*	.684*	- .041	.493*	.351*	1.00				
S-TURN VII	.148	.093	- .032	-.107	.313*	.059	1.00			
MA VIII	-.179	.270*	.253*	.389*	.154	.596*	- .036	1.00		
PHSE IX	.232*	.202	.287*	.041	.055	.184	.134	.397*	1.00	
DROP X	.133	-.258*	.150	-.128	.045	-.038	.060	.014	- .035	1.00

* Significant at .05 level

Indicator V, Dollar Expenditure for Curriculum Materials, was significantly correlated with two other indicators both with coefficients between .40 and .30. They were: Net Total Expenditures and Staff Turnover Rate.

Indicator VI, Net Total Expenditures, was most highly correlated with Teachers per 1,000 Weighted Pupils (r = .684) followed by Percent Staff with Masters Degree (r = .596), and Specialists per 1,000 Weighted Pupils (r = .493). It was also significantly correlated with Excess Enrollment (r = -.481), and Dollar Expenditure for Curriculum Materials (r = .351). Total Expenditures was one of the few indicators which correlated significantly with as many as five others; and the coefficients were among the highest with one greater than .60, one greater than .50, two greater than .40 and one greater than .30.

Indicator VII, Staff Turnover Rate, was significantly correlated only with Dollar Expenditure on Curriculum Materials (r = .313).

Indicator VIII, Staff with Masters Degree, was also correlated significantly with five others. Only one relationship has a coefficient greater than .50; Net Total Expenditures. Two coefficients are between .40 and .30; Percent Graduating Class Attending Post High School Education, and Specialists per 1,000 Weighted Pupils. Two had coefficients less than .30; Teachers per 1,000 Weighted Pupils and Total Course Offerings.

Indicator IX, Percent Graduating Class Attending Post High School Education, was significantly correlated with only three other indicators and only one with a coefficient greater than .30; Percent Staff with Masters Degree. Total Course Offerings and Excess Enrollment were correlated with Indicator IX with coefficients less than .30.

Indicator X, Dropouts, was significantly correlated only with Teacher per 1,000 Weighted Pupils and the coefficient was less than .30.

Summary of Indicator Intercorrelations

Among the indicators there were 17 correlation coefficients significant at the five percent level. There were five greater than .40, two greater than .50, and one greater than .60. The largest correlation was between Net Total Expenditures and Teachers per 1,000 Weighted Pupils ($r = .684$). The overall small coefficients tend to show that the indicators are relatively independent of each other.

The most surprising relationship found was, Teacher Turnover Rate was positively correlated with Expenditure for Curriculum Materials and Supplies. The least surprising of the findings was, Net Total Expenditures is related to Staff Characteristics and Class Size.

Correlations of the Indicators with the Quality Measures

Table II presents the correlation matrix of the indicators with the goals of education. Table II was produced in the canonical analysis using a sample size of 72. A coefficient of .235 is significant at the .05 level. The findings are reported below; first, the general findings followed by a brief description of the relationships for each indicator.

Only 20 of the 110 coefficients were significant. The largest coefficient was .452 ($ -TOTAL and Creative Potential); two other coefficients are greater than .40 (.436 between MA and SELF, and .415 between PHSE and Creative Potential). Nine of the coefficients were between .30 and .40; eight were below .30.

Every indicator, except Staff Turnover Rate, was correlated significantly with at least one goal of education as measured. PHSE was correlated significantly with six goals, both Dropouts and Total Expenditures were

TABLE II

CORRELATION OF THE IUPS INDICATORS WITH MEASURES OF THE PENNSYLVANIA GOALS OF EDUCATION

	EE	T/P	TCO	SP/P	$-CURR	$-TOTAL	S-TURN	MA	PHSE	DROP
	I	II	III	IV	V	VI	VII	VIII	IX	X
SELF I	-.098	.092	.373*	.159	- .121	.212	-.016	.436*	.248*	.147
OTHERS II	.033	.143	-.022	-.013	.177·	.072	-.018	.141	.220	-.216
SKILLS III	.039	.059	.008	.140	.298*	.110	-.018	.180	.322*	-.155
INTEREST IV	-.220	-.006	-.045	.060	.090	-.069	.012	-.051	-.140	-.118
CITIZ V	-.235*	.015	-.192	-.204	.059	-.237*	-.066	-.200	-.149	-.227
HEALTH VII	-.117	.117	-.084	.094	.160	.010	-.049	.138	.201	-.389*
CREAT-VII-O	-.050	.131	.173	.154	-.124	.222	.125	.138	.167	.186
VII-P	-.036	.234	.208	.315*	.204	.452*	.232	.384*	.415*	-.025
VOC VIII	-.094	.339*	.025	.095	.159	.244*	.069	.203	.390*	-.312
H-ACC IX	-.040	.086	.099	.074	.186	.044	.008	.020	.251*	-.289*
CHANGE X	.291*	-.146	.066	-.046	.079	-.083	.017	.028	.302*	-.144

* Significant at the .05 level

TABLE III

INTERCORRELATIONS OF THE MEASURES OF THE PENNSYLVANIA GOALS OF EDUCATION

	I	II	III	IV	V	VI	VII-O	VII-P	VIII	IX	X
MEANS	89.0	112.6	131.7	93.3	163.8	121.5	136.9	74.5	81.7	158.7	108.0
S. D.	1.58	2.34	14.95	3.70	5.11	3.29	2.70	1.69	1.12	3.35	2.97
SELF I	1.00										
OTHERS II	.252*	1.00									
SKILLS III	.145	.456*	1.00								
INTEREST IV	.414*	.341*	.079	1.00							
CITIZ V	.015	.471*	.124	.628*	1.00						
HEALTH VI	.065	.556*	.472*	.302*	.505*	1.00					
CREAT VII-O	.074	-.289*	.240*	-.081	-.279*	-.424*	1.00				
VII-P	.437*	.318*	.309*	.187	-.076	.040	.271*	1.00			
VOC III	.129	.616*	.426*	.198	.415*	.599*	.216	.314*	1.00		
H-ACC IX	.261*	.684*	.358*	.523*	.513*	.545*	-.239*	.342*	.506*	1.00	
CHANGE X	-.062	.447*	.408*	-.024	.130	.279*	-.017	.264*	.337*	.436*	1.00

* Significant at the .05 level

significantly correlated with three goals. Excess $E_n$rollment was the only indicator correlated significantly with two goals; the remaining indicators were significantly correlated with only one goal.

The generally low correlation coefficients show that, individually, the indicators are not particularly good predictors of the goals of education. Of the ten indicators, Staff Turnover Rate is the least effective predictor because it was significantly correlated with none of the goals and approached significance only with Creative Output (r = .232). In terms of the number of significant correlations, PHSE which was correlated with six goals is the best predictor of quality education as measured. Dropouts and total expenditure which were correlated with three goals are less effective than PHSE as predictors of quality education. Of these three best predictors, Total Expenditures is the one which is most directly controlled by budget decisions.

Indicator I, Excess Enrollment, was significantly correlated with two goals, Citizenship (r = -.235) and Preparation for a Changing World, (r =.291). Both these coefficients are less than .30 and one (.235) borders on insignificance. It appears that as class size decreases student achievement of citizenship increases. Student achievement of preparation for a changing world surprisingly decreases with a decrease in class size.

Indicator II, Teachers per 1,000 Weighted Pupils, was significantly correlated with only Vocational Development (r = .339). As the number of teachers per 1,000 pupils increases the student achievement of vocational development also increases.

Indicator III, Total Course Offerings, was significantly correlated with Self Understanding. A broad curriculum seems to be related to pupil achievement of self understanding.

Indicator IV, Specialists per 1,000 Weighted Pupils was significantly correlated with Creative Potential. An increase in the number of guidance counselors, art specialists, music specialists, etc., is coupled with an increase in student achievement of creative potential.

Indicator V, Dollars Spent on Curriculum Materials, was significantly correlated with pupil achievement of Basic Skills. An increase in curriculum expenditures is related to an increase in student achievement of basic skills. Of interest is, Dollars Spent on Curriculum Materials was not significantly related to any of the other goals of education.

Indicator VI, Net Total Expenditures, was significantly related to three goals of education; Citizenship (r = .237), Creative Potential (r =.452) and Vocational Development (r = .244). Surprisingly an increase in total expenditures is coupled with a decrease in pupil achievement of citizenship. On the surface this relationship appears to be an undesirable one. The largest coefficient in the entire matrix is between Net Total Expenditure and Creative Potential.

Indicator VII, Staff Turnover Rate, was not correlated significantly with any of the goals of education as measured. It appears that staff turnover rate is not an important predictor of quality education and cannot be used effectively as an indicator of the output of the schools when the output is measured using the device used in the study.

Indicator VII, Percent Staff with a Masters Degree or More, was significantly correlated with Self Understanding (r = .436) and Creative Potential (r = .384). The correlation between staff with masters degrees and self understanding is the second highest in the matrix. Because this indicator is one of the few that significantly correlated with more than one

goal, the coefficients are among the highest, and it is one of the more controllable ones, it would seem to be one of the better indicators of school effectiveness when used alone.

Indicator IX, Percent Graduating Class Attending Post High School Education, was significantly correlated with six of the eleven quality measures. It is not surprising that pupils who are successfully achieving, the goals of education would tend to continue education. It is surprising that interest in education is not related to continuing education.

Although PHSE appears to be the best indicator of quality education in terms of providing a signal of needed action it lacks direct controllability through budget decisions.

Indicator X, Pupil Dropout Rate, was significantly correlated with three goals of education; Health ($r = -.390$), Vocational Development ($r = -.312$), and Understanding Human Accomplishment ($r = -.289$). All these correlation coefficients are negative indicating that, as pupil achievement of these goals decreases the dropout rate increases. The most surprising finding is, there is no significant relationship between dropouts and pupil achievement of Basic Skills or Interest in Education.

The Canonical Analysis

Canonical correlation was chosen to test the overall hypotheses that the set of ten indicators are significantly related to the set of quality measures in at least one way. The Canonical correlation is the maximum correlation between linear functions of two sets of variables. The analysis finds weights for the variables that maximize the correlation between the predictors and criteria. For the special case with one criteria and multiple predictors, the problem is one of multiple regression and there is

one set of weights for the predictor variables. In canonical correlations both multiple predictors and multiple criterion are involved, and there are a number of pairs of linear combinations possible. Each pair of linear combinations is maximally correlated subject to the restriction that each combination be independent of all others on its side of the equation. The number of possible pairs of linear combinations is the number of predictors or the number of criterion, which ever is smaller (Cooley and Lohnes, 1966).

"Geometrically, the canonical correlation can be considered as a measure of the extent to which individuals occupy the same relative positions in the p-dimensional space as they do in the q-dimensional space (Cooley and Lohnes, 1966, p. 36)". In this study the canonical correlation can be considered as a measure of the extent to which the individual school districts occupy the same relative position with respect to the ten indicators of effectiveness as they do with respect to their pupil's achievement of the goals of education.

The canonical correlations of the indicators with the quality measures are listed in Table IV which also includes a summary of the Bartletts (1941) chi-square test for significance.

The first R_c (.825) was significant at the .05 level; the second R_c (.685) was significant at the .126 level; the significance level of the remaining were greater than .20. The canonical relationship was arrived at mathematically using the zero order correlation matrices and a linear combination of indicator variables was produced which is maximally correlated with a linear combination of quality variables. "Any linear combination of variables in a data matrix is said to be a factor of that matrix. (Nunnally, 1967, p. 291)". Therefore, the canonical correlation is the correlation

between a factor from the matrix of predictor variables and a factor from the matrix of the criterion variable matrix; the canonical weights are loadings of the variables on these factors.

The canonical weights associated with the first canonical correlation are listed in Table V. Because the majority of the bariables were negatively weighted and the largest weight for the indicator variables was negative, they are listed from the largest negative weight to the largest positive weight. Because they represent weights in linear combinations, the signs could be changed without affecting the canonical correlation.

It appears from the pattern and magnitude of the weights that the most important predictors in the relationship are total expenditure, percent graduating class attending post high school education, and dollars spent on curriculum materials; and the most important criterion are self understanding, vocational development, creative potential, and citizenship.

Although a more definitive statement about the importance of the individual variables to the relationships would be desirable, the major contribution of the canonical analysis is the finding: there is a significant canonical correlation between the <u>set</u> of quality variables. The canonical correlation was .825, which when interpreted as a product-moment correlation is the same as a coefficient of determination of .681.

This canonical correlation is a measure of the extent to which the school districts in the sample occupy the same relative position with respect to their pupil's achievement of the goals of education as measured by the Pennsylvania Bureau of Educational Quality Assessment.

TABLE IV

SUMMARY OF THE CANONICAL ANALYSIS OF THE IUPS INDICATORS WITH MEASURES OF THE PENNSYLVANIA GOALS OF EDUCATION

Roots Removed	Largest Root Remaining	R_c	Lambda	Chi-square	df	P
0	.681	.825	.0566	175.0	110	<.005
1	.469	.685	.177	105.0	90	= .126
2	.281	.530	.334	66.9	72	>.20
3	.230	.479	.464	46.8	56	>.20
4	.216	.465	.602	30.9	42	>.20
5	.122	.349	.769	16.0	30	>.20
6	.073	.270	.875	8.11	20	>.20
7	.037	.193	.944	3.49	12	>.20
8	.014	.120	.981	1.17	6	>.20
9	.005	.068	.995	.28	2	>.20

TABLE V

CANONICAL WEIGHTS ASSOCIATED WITH THE FIRST CANONICAL CORRELATION BETWEEN THE IUPS INDICATORS AND THE QUALITY MEASURES

INDICATORS		QUALITY MEASURES	
-.705	$-TOTAL	-.432	SELF
-.441	PHSE	-.426	VOC
-.243	TCO	-.396	CREAT-P
-.224	S-TURN	-.303	CREAT-O
-.194	SP/P	-.214	HEALTH
-.070	DROP	-.062	H-ACC
-.050	EE	-.002	CHANGE
-.021	MA	.080	SKILLS
.247	T/P	.175	OTHERS
.304	$-CURR	.246	INTEREST
		.485	CITZ

Factor Analysis

To determine the number of factors needed to satisfactorily define the ten indicators, a principal component analysis was undertaken. Those factors with eigenvalues greater than one were orthogonally rotated with the hope that the factors would be more interpretable.

In the Analysis there were four factors with eigenvalues greater than one and combined they accounted for 71 percent of the variance in the indicators. Table VI presents a summary of this analysis. The four factors were rotated and the rotated factor matrix is presented in Table VII.

Only those variables with loadings greater than .30 were considered in the interpretation of the factors. Using this limitation, five variables make up the first factor, four make up the second factor, two make up the third, and two the fourth. From Table VII, it can be seen that, in general, the factor loadings are well above or below .30 which makes it comparatively easy to identify the variables important to each factor. Also, only three variables were highly loaded on more than one factor and none were highly loaded on more than two.

Factor A, five indicators are weighted high on this factor. Net Expenditures dominates the weighting with .883. This is followed by Teachers Per 1000 Weighted Pupils (.746), Excess Enrollment (-.703), Specialists per 1000 Weighted Pupils (.689), and Staff with Masters Degree (.636). This factor appears to be basically a money factor. It also appears to be a staff factor especially when the obvious relationship between staff size and class size is considered.

School districts high on this factor would have more teachers per 1,000 pupils making smaller classes possible; more specialists per 1,000 pupils

making a larger percent of the staff with at least a masters degree necessary; and larger expenditures to pay for these characteristics. Staff Expenditures is the name given this factor.

Factor B, four indicators are weighted high on this factor. Percent graduating class attending post high school education (.792) and total course offerings (.732) dominate the weighting. These are followed by percent staff with masters degree (.547) and excess enrollment (.459).

This factor is characterized by school districts with a larger percentage of its graduates continuing education, a diversified curriculum implemented by a well-trained staff, and larger average class size.

It is clear that percent graduating class attending post high school education and total course offerings are the primary variables for this factor especially when it is noted that excess enrollment and percent staff with masters degree are not only weighted on the first factor but more heavily so. With this in mind the name given this factor is Orientation to Broad and Continuing Education.

Factor C, only two indicators are weighted high on this factor. Staff turnover rate (.813) and dollar expenditure on curriculum materials (.776) are clearly the major variables that make up Factor C. School districts scoring high on this factor would have a larger teacher turnover and larger expenditures for curriculum materials.

There seems to be no simple explanation for why an increase in curriculum expenditures is coupled with an increase in staff turnover rate. These two indicators have low weighting on all the other factors, and the other indicators all have very low weightings on this factor. These findings make it difficult to minimize the importance of either teacher turnover or

TABLE V1

SUMMARY OF FACTOR ANALYSIS OF THE IUPS INDICATORS

FACTOR	EIGENVALUE	CUM. PROP. OF VARIANCE EXPLAINED	INCREASE IN VARIANCE EXPLAINED
1	2.914	.291	29.1%
2	1.749	.466	17.5%
3	1.348	.601	13.5%
4	1.085	.710	10.9%
5	.755	.785	7.5%
6	.632	.848	6.3%
7	.596	.908	6.0%
8	.466	.955	4.7%
9	.306	.985	3.0%
10	.149	1.00	1.5%

TABLE VII

ROTATED FACTOR MATRIX FOR THE IUPS INDICATORS

INDICATOR	FACTOR A	FACTOR B	FACTOR C	FACTOR D	COMMUNALITY
EE	-.703	.459	.116	.100	.728
T/P	.746	- .001	.138	-.384	.718
TCO	-.107	.732	-.151	.203	.612
SP/P	.689	.019	-.113	-.018	.488
$-CURR	.231	-.063	.776	.257	.725
$-TOTAL	.883	.107	.248	.042	.853
$-TURN	-.147	.079	.813	-.219	.737
MA	.636	.547	.020	.157	.729
PHSE	.114	.792	.167	-.209	.712
DROP	-.095	.047	.020	.884	.795

expenditures for curriculum materials to this factor.

Naming Factor C was difficult and tenuous. By assuming that teacher turnover is a manifestation of working conditions and dollars spent for curriculum materials may reflect expenditures priorities, which can influence the working conditions; the factor was named Staff Working Conditions.

Factor D, dropout rate clearly dominates this factor with a weighting of .848. The only other variable with a weight greater than .30, is teachers per 1,000 weighted pupils, and its weight (-.384) is less than half that of dropout rate. This factor is characterized by schools with a large pupil dropout rate and fewer teachers per 1,000 pupils.

Considering that teachers per 1,000 pupils is also weighted heavily on the first factor, and that Nunnally (1967) cautions against over interpretating factor loading less than .40 this factor was names Pupil Dropout. It is apparently a nearly pure pupil dropout factor.

Summary of the Findings

The ten indicators and the eleven quality measures were subjected to canonical analysis and there was one canonical correlation which was significant at the .05 level (.825). From the pattern of canonical weights the most important indicator variables in the relationship appeared to be: Total Expenditure, Percent Graduating Class Attending Post High School Education, and Dollars Spent on Curriculum Materials. The most important criteria in the relationships were: Self Understanding, Vocational Development, Creative Potential, and Citizenship.

The ten indicators were factor analyzed using principal component analyses. Four factors which explained 71 percent of the variance in the indicators

were identified, then rotated in an attempt to make naming easier. These four factors were named: Staff Expenditures, Orientation to Broad and Continuing Education, Staff Working Conditions and Pupil Dropouts.

CONCLUSIONS

Question I, "Can the indicators developed by the IUPS be considered to have formal validity?"

The criteria used by the IUPS for choosing an indicator included controllability, relevancy, and availability of data. From the literature it is apparent that they are considered relevant at least by many investigators. The data needed for calculation of the indicators is readily available to administrative officials through the normal procedures of filing forms and preparing reports.

There is some question of the controllability of four of the original twelve indicators: (Percent of Graduating Class Attending Post High School Education, (2) Dropout Percent, (3) Language Achievement, and (4) Mathematics Achievement. Budgetary control of these indicators is more theoretical than real, but when it is considered that "no single one of the indicators will provide the only evidence of need for action, ...(Fels, 1968, p. 103)", and the indicators are to be used as a group to suggest needed action; a wide range of controllability is acceptable.

Conclusions about formal validity always involve a subjective judgement of some kind and there can be no quantitive statement of degree. Because they appear to be relevant, controllable to a degree, and calculable from readily available data, the investigator concluded that the indicators developed by the IUPS have as much formal validity as could be reasonable expected.

Question II, "Are the indicators as a group significantly related to quality education as measured by the Pennsylvania Bureau of Educational Quality Assessment?" Canonical correlation analysis was the technique used to answer this question. In a stratified random sample of 72 Pennsylvania secondary schools, data were collected on the ten indicators and the mean pupil achievement on eleven quality measures. With the indicator variables as predictor variables and the goals of education as criteria variables, a canonical correlation equal to .825 was found; it was significant at the .005 level.

The canonical correlation (R_c) is like the Pearson product-moment correlation (r_{xy}), except: (R_c) is a measure of the relationship between sets of variables while (r_{xy}) is a measure of the relationship between individual variables. From the findings of the canonical analysis it is concluded: The indicators as a group are significantly related to the quality measures as a group in at least one way. When the canonical correlation is compared to validity coefficients reported in the literature, it is apparent; not only are the indicators related to the goals of education as measured by the Pennsylvania Bureau of Educational Quality Assessment, but the relationship is relatively large.

From the magnitude of the canonical weights of the indicators, it is concluded: Net total expenditures is the most important of the indicators of school quality in the significant relationship. Net total expenditures is followed by percent graduating class attending post high school education and expenditures on curriculum materials and supplies. Two out of three of the more important indicators are directly controlled by budget decisions; net total expenditures and expenditures for curriculum materials.

Question III, The final basic question asked in this study was "Can the ten indicators be adequately expressed by fewer than ten factors?" Principal component factor analysis was used to investigate this question. In the analysis there were four factors identified which explained 71 percent of the indicator variance in the sample. The naming of the factors was tenuous, but the variables important to each factor were easily identified. For the purpose of discussion, the first factor which explained 29.1 percent of the variance was named, Staff Expenditures; the second factor which explained 17.5 percent of the variance was named, Orientation to Broad and Continuing Education; the third factor which explained 13.5 percent of the variance was named, Staff Working Conditions, and the fourth which explained 10.9 percent of the variance was named, Pupil Dropout.

Based on the factor loadings there is reason to believe that three of these four factors may be influenced by budget and policy decisions. Net expenditures was highly correlated with the first factor; total course offerings was highly correlated with the second factor; and dollars spent on curriculum materials was highly correlated with the third factor. The only budget variables that was reasonably correlated with the fourth factor was teachers per 1,000 weighted pupils, and the correlation was low (-.384). Even discounting the fourth factor, there are three factors highly related to budget decisions which account for 60 percent of variance of the ten indicators.

From these findings there is reason to believe the ten indicators can be satisfactorily reduced to four factors, a money factor which is reflected by total expenditures, an orientation to education factor which is reflected by the total course offerings, a working conditions factor which is reflected by

expenditures for curriculum materials, and a dropout factor which may be influenced by the teachers pupil ratio.

From these findings, it was concluded: The ten IUPS indicators can be reduced to four factors which explain 71 percent of the indicator variance; and one or more of the directly "controllable" indicators are highly correlated with three of the four factors. Comparing the variable weights in the significant canonical relationship with the variable weights on the factors identified, it appears that the money factor, the orientation to education factor and the working conditions factor are important to the quality education relationship but the dropout factor is not.

RECOMMENDATIONS

As developed now, the PPBS still needs refinements particularly with respect to the indicators and their relationship to the outcome of the schools. This study represented an attempt to empirically investigate these relationships on a gross scale, and it is hoped that follow-up studies will be conducted to further define the relationships. Because the PPBS will be implemented before all the refinements are made, there is a need to discover the individual contributions of the indicators in the quality relationship. Also there is the need to define and develop new and better indicators.

For those individuals and groups interested in, and responsible for, defining and developing new and better indicators, it is recommended that they start with four indicators, one to describe each of the four factors identified in this study. After indicators for staff expenditures, orientation to broad and continuing education, staff working conditions, and dropout rate have been

developed; others should be developed and tested to discover if larger and more canonical relationships with quality education can be produced. There are many other variables that could be considered. A few are: expenditures for extracurricular activities, age and experience of staff, distance pupils transported, and racial composition of staff and pupils. The findings of Coleman (1966), Flanagan (1960), and others suggest that staff characteristics may be the most fruitful areas to seek new indicators.

For those who are going to implement the PPBS and use the present indicators to make budget decisions, regression analysis should be undertaken immediately. These analyses can provide a better description of the relationships of the individual indicators to quality education than the zero order correlations presented in this study. For these investigators, there are at least two options.

One option, to weight the quality measures using the canonical coefficients of the significant relationship found in this study; and use this "most predictable criterion" in multiple regression will provide information about the contributions the individual indicators make to quality education as a whole. This will aid program planners establish priorities based on the effect changes in the indicators may have on "over-all" educational quality.

The second option is to use the ten indicators as the predictor variables and the measures of the ten goals as individual criterion variables in a series of multiple regression analyses. There should be at least eleven multiple regression analyses undertaken, one using each of the Pennsylvania Bureau of Quality Assessments' quality measures as the criterion and the ten indicators as predictors. The results of these analyses will show the contributions the individual indicators make to the variation of the individual goals which would

help the policy-making officials establish indicator priorities linked with specific educational goal priorities.

Until these analyses can be made and interpreted, the users should use total expenditures, percent graduating class attending post high school education, and curriculum expenditures as the primary indicators of quality education. This recommendation is based on the importance of these variables in the significant canonical relationships. This recommendation is also reasonable in light of the findings that net expenditures was found important to the first factor, percent graduating class attending post high school education was found important to the second factor, and curriculum expenditures was found important to the third.

Until the multiple regression analyses for each of the goals can be completed, the product-moment correlations of the indicators with the goals can be used to provide some basis for judging the effect the variation of the individual indicators may have on pupil goal achievement. It is suggested that the following relationships be used with caution and the realization that the relationships are small and correlation coefficients are sensitive to sampling fluctuations:

1. An increase in total course offerings, percent staff with masters degree and percent graduation class attending post high school education is coupled with an increase in pupil achievement of self understanding.

2. None of the indicators provide correlational evidence of pupil achievement of understanding others.

3. Percent pupils attending post high school education and curriculum expenditures appear to be the best indicators of pupil achievement of basic skills.

4. None of the indicators provide correlational evidence of pupil achievement of interest in school.

5. The best indicators of pupil achievement of citizenship are, excess enrollment, and total expenditures; however, an increase in total expenditures is coupled with a decrease in student achievement of citizenship.

6. Pupil dropout rate is the only indicator of pupil achievement of understanding health.

7. None of the indicators provide correlational evidence about pupil achievement of creative output.

8. Total expenditures, percent graduation class attending post high school education, percent staff with a masters degree or more, and specialists per 1,000 Weighted pupils are the best indicators of pupil achievement of creative potential. Total expenditures is the best of the four.

9. Pupil achievement of vocational development is indicated by teachers per 1,000 Weighted pupils, percent graduating class attending post high school education, dropout rate, and total expenditures. Percent graduating class attending post high school education is the best of these indicators for vocational development.

10. Pupil dropout rate and percent graduating class attending post high school education are the best indicators of pupil achievement of understanding human accomplishments.

11. Percent graduating class attending post high school education and excess enrollment are the best indicators of pupil achievement of preparation for a changing world; however, a decrease in class size is coupled with a decrease in achievement of preparation for a changing world.

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APPENDIX B

A BRIEF DESCRIPTION OF THE EDUCATIONAL PLANNING-PROGRAMMING-BUDGETING SYSTEM DEVELOPED FOR IUPS

A brief discussion of the EPPB System is contained in this section. The flow of the basic system is shown in Chart I. This is a series of procedural steps which start at the beginning of the planning cycle in August and continues into early spring when the budget is finally prepared and approved.

First Procedural Step - Data Collection and Analysis

The first step involves several data collection and analysis activities to prepare for planning. Some of the data preparation involves making forecasts of enrollment levels over the next five-year period. Forecasts are made of key revenue factors, such as, property tax rates.

The first step also includes an analysis of the school district's activities at the end of the last school year. Last year's actual expenditures, the current year's approved budget and the costs and benefits of the programs and projects are reviewed. Since most cost data will have been collected in terms of budget categories, it is necessary to translate them into a program structure. This is done by means of a crosswalk, which is simply a method of allocating budget amounts to program categories. (If the school district has a sophisticated information system which can produce cost summaries by either budget or program structure, the crosswalk process is not necessary.)

Second Procedural Step - Base Case

The second step involves the production of the base case from the data gained in the first step. In the EPPB System the cost and revenue parts of

the base case are forecast by means of a computer program -- a simulation (which is described in the "Documentation Manual"). (4) In the base case, last year's decisions and projects are continued for the remaining four years previously planned plus one additional year. The base case may involve new estimates of enrollment and revenue forecasts and, therefore, may predict different results than did last years plan. The base case provides data which can be analyzed by the decision-makers -- the school board and superintendent. To facilitate decision-making the planning staff and the superintendent prepare a status report. This is done so that all people participating in the planning have a full understanding of the base case, that is, of where the school district will be five years hence, if no new decisions are made.

Third Procedural Step -Objectives, Priorities and Constraints

The third procedural step is the establishment or modification of objectives. Specifically, the superintendent and board:

-Determine whether or not new indicators should be used and, if so, they establish operational definitions and measurement procedures.

-Revise the desired levels for the indicators. This process defines the gaps, the differences between the desired levels and the levels predicted by the base case.

-Put the gaps into priority order, indicating which should be closed first.

-Establish constraints within which planning must proceed. For example, they might limit the rate at which new buildings can be constructed.

All of these policy decisions are reflected in a policy report, which is again

made available to all interested parties.

Fourth Procedural Step - Project Design

The fourth procedural step starts true planning. The first process of planning is to define new projects which will attain the objective, that is, close the indicator gaps. For example, if there has been a gap in reading achievement, a task force would be established to design a project which will improve the level of reading in the school district at the grade levels in question.

This is one of the points at which "systems analysis" or cost-benefit studies come in to play. The task force would establish the project objectives which are derived from the school district's objectives of closing the gap. It should examine a variety of alternatives for attaining the objective, thus, establishing a number of possible projects. The task force would perform a cost-benefit analysis amont the project alternatives to select those which appear to provide the best cost-benefit positions. The task force then describes in detail the most promising projects in terms of:

-Project organization;

-Techniques to be used;

-Manpower required;

-Materials, facilities and equipment required; and

-a description of how the project will evolve over time (Perhaps with the use of network planning techniques).

The project task force then prepares a summary of the project in terms of its manpower requirements, costs, revenue, and potential affect on indicators. This latter summary will be used in the fifth step of planning.

The forecasting of benefits in education is difficult. In the EPPB System, this means that estimating future increases in output indicator levels presents a problem. Because there are no well developed learning theories, it is impossible to forecast the levels of indicators related to learning by formal calculations. In the EPPB System these forecasts are made by expert judgment. Input indicators, such as teachers per 1000 students, are automatically computed. Thus, specific estimates of the affect of each project on all indicator levels are made. (The estimate of the base case output indicator levels is also made by formal, subjective judgment).

Fifth Procedural Step - Project Selection

The fifth procedural step in EPPBS is to determine which of the proposed projects should be implemented. Usually there is a fairly large number of projects at this point, perhaps 20 or as many as 100. It is clear that the district cannot afford to finance all of these projects, and, furthermore, since many of the projects may have the same effect on the indicators, not all may be needed. The project selection process provides a second use for cost-benefit analysis -- an analysis which allows trade off between the various projects. In order to facilitate introducing new projects other projects can be defined which reduce existing programs or projects or eliminating existing projects.

Briefly, a search procedure must be instituted which examines the various combinations of possible projects to find those which offer the desired cost-benefit position. A project set is defined as a set or group of some or all of the possible projects. A project set combined with the base case is a plan. Total and net costs and an estimate of benefits in

terms of indicator levels can be associated with each plan. To develop the cost and revenue parts of this forecast, the computer forecasting program is used a second time. Other project sets are tried until a plan is selected which seems to offer the required benefits within feasible revenue limits. This plan is then detailed for presentation to the school board.

Sixth Procedural Step - Prepare and Approve Budget

After the plan is accepted by the board, the first year of the plan is used to prepare the detailed budget. There are three general methods of of doing this. In Method 1, the planning data is used intuitively by the budget makers to produce the next year's budget. This budget is then re-crosswalked into the program categories. The result of this budget crosswalk and the plan are compared. There may be differences since the budget preparation may have misinterpreted some of the planning implications. Adjustments are made to either the plan or the budget until the plan and budget are in agreement. The budget is then prepared. This method was first used with the EPPB System.

Method 2, the one now recommended for use with the EPPBS, depends upon the assumption that new projects can be planned at the level of detail of expenditure accounts. The procedure is to first prepare a year-one budget under the assumption that no new decisions are made, that is, a no-change or continuation budget. The no-change budget is then crosswalked to estimate year one's costs. Planning then proceeds as usual -- producing the new projects which are described at a detailed cost level. The project data for year one can then be added to the no-change budget to obtain the total year one budget.

It is possible with the third method to convert directly from a plan to a budget. However, this method requires some special data which is not handled by the EPPB System. In order to accomplish this process it would be necessary to carry the expenditure account data within each program and project category and within each budget category. If this is done, then the translation from the plan to the budget can be made directly. Since the data system required is complex, it will be some time before school districts can implement such a data system for the purpose of utilizing this method.

APPENDIX C

BUCKS COUNTY PILOT EVALUATION

Evaluation has been one of the driving factors in the push for development of a Planning-Programming-Budgeting System, however evaluation is but one aspect of the systems approach. Being able to evaluate educational programs in relation to their costs is important, but planning and budgeting to improve those programs by better allocation of available resources is the ultimate goal of the system.

The Planning-Programming-Budeting System developed by the Intermediate Unit Planning Study (IUPS) has taken the first step toward this goal. It must be remembered to change a way of thinking, i.e., program budgeting as opposed to line item accounting, a mode of operation that has been in existance for many years, takes time and to be clearly understood must be developed logically one stage at a time.

An educational accounting system to accommodate the Planning-Programming-Budgeting System remains to be devised. Until a statewide accounting system compatible with a program budgeting system is developed and adopted the dual system of line item budgeting and program budgeting must continue to exist. The crosswalk technique employed in the pilot study effectively bridges the gap between the conventional line item accounting now in use and budgeting procedures related to programs and projects. The table developed to relate expenditure accounts to Planning-Programming-Budgeting System program classifications helped to implement this process. The PPBS provides a tool whereby planning decisions can be made in terms of their projected impact on achievement of specified goals. The resulting linkage of inputs to goal attainment suggests that goal formulation must be one of the primary components of the systems approach to educational planning and budgeting.

The pilot phase of the program-project structure just completed by the Intermediate Unit Planning Study seems to be broad and flexible enough to be used by both the Intermediate Unit and local school districts. Still missing is the link connecting the Intermediate Unit structure to a state system. The next step then must be to adapt it to a compatible program project system on the state level.

The three volumes on procedures resulting from the IUPS study are voluminous but are comprehensible and thorough enough to make it possible to cycle the Planning-Programming and Budgeting process by either manual means or more quickly and efficiently by a semi-automated batch processing version.

The manual system has been of value primarily as a training instrument but can also serve as the vehicle for implementing Planning-Programming-Budgeting Systems in Intermediate Units and school districts that do not have access to or do not wish to use electronic data processing.

The indicators developed for the pilot project were of limited usefulness because they were selected arbitrarily and without reference to carefully developed goals and objectives. However experience with a limited number of such indicators provides support for the hypothesis underlying the pilot project - namely that meaningful information regarding the cost effectiveness of program and project alternatives can be derived by analysis of system components.

In brief, experience with the project confirms that (a) output indicators can be selected to give information regarding the health of the system (b) indicator levels can be set to conform to goals (c) progress relative to

goal attainment can be appraised, (d) inputs including expenditures and manpower can be identified with goal oriented programs and projects and (e) program and project practices can be selected to maximize resources for those programs and projects for which the gap between the desired and observed indicator levels is greatest. On the other hand the project was of too short duration to observe or simulate the effects of varying projects programs and resource allocations.

The system's collection of filing requirements help to consolidate a data base which had to be amassed to facilitate computational efforts designed to describe the environment in which the district operates. They help to keep this information in a form suitable for efficiently cycling the subsequent planning and forecasting procedures.

Although the project was designed primarily to develop and determine the feasibility of a Planning-Programming-Budgeting System at the school district and county or Intermediate Unit level of school administration, indirect benefits accrued which should be of value in expanding and modifying the proposed system. These include:

- Compilation of a suitable data base
- projections based on available trends, assumptions and judgments
- experience of participants in goal setting, appraisal of results, policy review and planning.

In summary the Intermediate Unit Planning Study's EPPBS provided the framework for relating activities of management in a way that helped to clarify objectives and make improved allocation decisions. It focused on

identifying objectives and determining ways to measure or estimate progress toward them. The programs, projects and activities were then related to these objectives.

The forecasts of future demands, future resources available and the capability of current programs and projects to meet the objectives of the district explicity considered the implications of projected conditions.

McKEAN COUNTY PUBLIC SCHOOLS
SMETHPORT PENNSYLVANIA

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April 8, 1970

To: Albert M. Neiman, Project Director
Intermediate Unit Planning Study

From: McKean County Office--Pilot District
C. F. Feit
R. Stromberg

Re: Field Evaluation Report

We are pleased to offer the following subjective evaluation of the Planning, Programming, and Budgeting System produced through the Intermediate Unit Planning Study. This evaluation is based upon our experiences and observations as a pilot intermediate unit office.

I. Feasibility of implementing the PPB System in intermediate units.

Comments:

A. The System is definitely refined to the point where Intermediate Units can implement it into their operations. However, it is our opinion that:
1. it should not be implemented until one or more persons in the Intermediate Unit has received special instruction (group or individual) from someone who has successfully used the System and
2. it should not be implemented until the office is committed to assigning one or more persons with sufficient time and authority to assure continuous activity in implementing and maintaining the System.

B. Our experiences as a pilot office proves that the products of the System are:
1. A greatly improved global view of the operations of the office.
2. A much improved technique for considering the future implications of current decisions regarding program alternatives priorities.
3. A system which triggers attention to critical problem areas now and in the future.
4. A method (computer) for rapidly projecting cost and enrollment estimates.

II. Appropriateness and Relevancy

A. Program Structure--We found this element to be very satisfactory. Flexibility is provided for considering a service as a separate project when it is desired that the service retain its individual identity.

B. The Crosswalk--This is extremely valuable in getting a global view of the costs of all services of the Intermediate Unit. It is especially helpful in discussions with Board members and district superintendents.

C. The Manual Version--It is our opinion that the manual version can be followed with a minimum of difficulty. It provides a useable system for those who do not wish to utilize computer services. It is adequate for the smaller school districts with fairly static populations and staff capability.

D. The Semi-automated batch processing version--This version which was used in our pilot study can be followed satisfactorily. The completion of the input cards caused some problems and requires a person thoroughly familiar with the system for clarification of some of the instructions. However, this version is far superior to the manual version in terms of time saved in computation. It would appear that the difficulty expressed above could be remedied by more adequate instructions.

E. Indicators--The indicators are appropriate and useful. They give the management staff a variety of measurements which results in insights as to what is happening from year to year within the organization. As a staff gains experience with the system, some of the indicators will be changed or, in some cases, discarded. The indicators are largely quantitative rather than qualitative and inferences concerning quality must be made from the quantitative data.

Different intermediate units will undoubtedly find a need to generate their own indicators in the future. There is a definite need for continued and intensive effort in producing a body of indicators from which users can select those appropriate to their own operations.

II. F. The Files--We find the filing system to be very adequate. The structure suggested provides ready access to the information when required. The data files suggested were most helpful as we went along.

G. The Forecasting System--The forecasting of population has not been satisfactory for our region. We find that with the present static population trends, our own estimates are more accurate than those provided by the system. In urban areas, the forecasting may be more applicable or if a corrective procedure and technique were used to adjust projections to Area #9 Districts.

Summary

The PPB System developed through the Intermediate Unit Planning Study is appropriate and relevant to the operations of Intermediate Units or County Office and local school districts. It represents a vast improvement over the techniques now available to these offices.

ON-SITE EVALUATION
PDE USE

U.S.O.E. Number 4280 PDE Code Number R-30

18. Evaluation Team

Chairman James O. Brokenshire

Members None

19. Date of On-Site Evaluation March 25, 26, 1971

20. Length of Evaluation 2 days

Committee Evaluation

21. Changes necessary in General Information. (Items 1-8)

Item Number	New Information
2	New Horizons for In-Service Training and Student Residency Programs (Intermediate Unit Planning Study Component)

22. Specify differences between self-evaluation and committee evaluation. (Items 9-15) If additional space is desired, please use 8½ x 11 sheet.

Item Number	Differences Observed by Team
11b.	Communications from Dr. Musmanno, Dr. Grobman and Mr. Wally Weaver of the Department of Education indicate that they are well satisfied with the progress to date. George Riddle from the Governor's Office of Administration also is involved in the overall plan. His reaction has been one of satisfaction as indicated in correspondence.

ON-SITE EVALUATION
PDE USE - Continued

23. Recommendations (Revisions needed in the project, staff, budget, etc.)

The planning portion of the program is nearing completion as scheduled. The results will be limited if the program is not piloted.

In order to pilot the program in a limited number of school districts preparatory to field testing and implementation, further funding and additional staffing is needed for the next fiscal year.

It is recommended that a liaison person be provided for in the staffing to work with the school districts who are piloting the system.

It is further recommended by the committee that the project be funded for the next fiscal year in the amount of $50,000 (minimum). This should permit the staff to continue development and pilot the system in several school districts as part of the over all plan of state wide implementation.

FOR PDE USE ONLY

- [ ] Recommended Continued Funding
- [ ] Fund with Changes from Item #23
- [ ] Discontinue Funding

TO BE COMPLETED BY ON-SITE EVALUATION TEAM

- [X] Recommended Continued Funding
- [ ] Fund with Changes from Item #23
- [ ] Discontinue Funding

Committee Chairman James J. Buchenhorn
(Signature)

336 Washington Street
(Address)

West Pittston, Pennsylvania 18643

Date March 26, 1971

GENERAL PROJECT ASSESSMENT

st _____ 2nd _____ 3rd _____ Evaluation

th X

Date of this Evaluation: March 25-26, 1971

ESEA, Title I Administrative Unit # _____
ESEA, Title III USOE # 4280 State Code R-30

Cultural agency participation and non-public educational agencies participation.

None necessary

Strengths of project.

PPBS can be used as a planning tool, simulator, for projections, and as a public relations type device. It is general enough to be adaptable to all state school districts.

The project has demonstrated that cooperation can take place among involved agencies (state, intermediate and local).

Special problems and weaknesses.

The problem has been one of communication due to the fact that LEA has been dependent upon feed back from both the state and local school districts.

The LEA has been able to make their program compatable with state requirements but did not have time or funds to run a pilot program.

The LEA has been limited to modification of local school district PPB rather than at both the intermediate and local level.

Recommendations.

The LEA has demonstrated that it is capable of serving as a liaison between local school districts and the Department of Education in PPB. It has also been demonstrated that the system developed by LEA can be made compatable with the state PPBS and on that basis it is recommended that the project be continued to pilot the system in order to prepare it for implementation and or field testing.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF PUBLIC INSTRUCTION
BOX 911, HARRISBURG, PA. 17126

March 8, 1971

Dr. Albert M. Neiman
Administration Building
Doylestown, Pennsylvania 18901

Dear Dr. Neiman:

It was a pleasure to have you and Dr. Moats at our meeting on Tuesday regarding the development of a PPBS model for school districts within the Commonwealth.

From our viewpoint, we are trying to avoid the mass confusion of implementing this system at the L.E.A. level by developing a reasonable and tested PPBS model prior to presenting it to the school districts. The work done by your group is making a valuable contribution to this end. We feel that the work done to date is of high quality and will have a definite impact on our long range objective of implementing the system state-wide.

To date, your group has met every deadline established for the project. We hope that we will be able to continue this achievement until the end of the present funding period when a manual is to be produced. I am sure you will endeavor to meet this commitment also.

We plan to have a meeting with Don Carroll in the next few days to discuss funding possibilities for the next fiscal year. I am hoping for a positive answer.

Sincerely yours,

Sydney M. Grobman

Sydney M. Grobman
PPBS Manager

SMG:mhj